DISSERTATION ON

COMPARISON OF EFFICACY OF T.LABETALOL AND T. NIFEDIPINE AND ITS FETOMATERNAL OUTCOME IN MILD PREECLAMPSIA

Dissertation submitted to

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY

In partial fulfilment of the regulations
for the award of the degree of

M.S. OBSTETRICS AND GYNAECOLOGY

BRANCH – II

THANJAVUR MEDICAL COLLEGE,

THANJAVUR - 613 004

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY

CHENNAI - 600 032

APRIL -2014

CERTIFICATE

This is to certify that this dissertation entitled "COMPARISON OF EFFICACY OF T.LABETALOL AND T. NIFEDIPINE AND ITS FETOMATERNAL OUTCOME IN MILD PREECLAMPSIA" is a bonafide original work of **Dr.CHRISTINA MARY KAVITHA** in partial fulfilment of the requirements for M.S Branch -II (Obstetrics & Gynaecology) Examination of the Tamilnadu Dr.M.G.R. Medical University to be held in APRIL - 2014. The period of study was from October 2012 to October - 2013.

Prof. Dr.K.MAHADEVAN.M.S.,
DEAN
THANJAVUR MEDICAL COLLEGE
THANJAVUR - 613004

Prof. Dr. B.THAMARAI SELVI M.D.,D.G.O
HEAD OF THE DEPARTMENT
DEPT. OF OBSTETRICS AND GYNAECOLOGY
THANJAVUR MEDICAL COLLEGE
THANJAVUR - 613004

DECLARATION

I, **Dr.CHRISTINA MARY KAVITHA**, solemnly declare that dissertation titled**"COMPARISON OF EFFICACY OF T.LABETALOL AND T.NIFEDIPINE AND ITS FETOMATERNAL OUTCOME IN MILD PREECLAMPSIA"** is a bonafide work done by me at Thanjavur Medical College, Thanjavur during October 2012 to October 2013 under the guidance and supervision of **Prof.Dr.B.THAMARAI SELVI. M.D,.D.G.O.,** Head of the department, Department of obstetrics and gynaecology, Thanjavur Medical College, Thanjavur.

This dissertation is submitted to Tamilnadu Dr. M.G.R Medical University towards partial fulfilment of requirement for the award of **M.S degree (Branch -II) in Obstetrics and Gynaecology**.

Place: Thanjavur
Date: **(Dr.CHRISTINA MARY KAVITHA)**

ACKNOWLEDGEMENT

First and foremost I express my gratitude to the God Almighty for everything.

I gratefully acknowledge and express my sincere thanks to **Prof.Dr.K.Mahadevan.,** Dean , Thanjavur Medical College and hospital, Thanjavur for allowing me to do this dissertation and utilizing the Institutional facilities.

I am extremely grateful to **Prof Dr.B.Thamarai Selvi,M.D.,D.G.O** professor and Head, Department of Obstetrics and Gynaecology, Thanjavur Medical Collegeand hospital, for her full-fledged support,valuable suggestions and guidance during my study and my post graduate period.

I would also like to thank **Prof Dr.S.Swarupa Rani M.D.,D.G.O.,** formerly professor of the Department of Obstetrics and Gynaecology for her support and guidance.

I would like to express my gratitude to my respected professors **Prof.Dr.R.Rani M.D.,D.G.O., Dr.K.Gomathy M.D.,D.G.O., Dr.E.Kalarani M.D.,D.G.O**., for their guidance and constructive criticism in completing my dissertation.

I would also like to extend my warmest gratitude to **Dr. P.Amudha,** registrar , Department of Obstetrics and Gynecology for her constant encouragement and support.

I express my gratitude to **Dr.C.Raji M.D**., **Dr.M.Shyamala Jothy M.S., Dr.T.Delphine Rose M.D., Dr.V.Thendral M.D.,** Assistant professors of our department for their valuable guidance and suggestions that made this work possible.

I would also like to thank **Mr.Jesus raja** for his excellent support in statistical analysis

I would also like to thank all the medical and para-medical staffs who have helped me complete this study.

A special thanks to all the patients who willingly co-operated and participated in this study.

I would like to thank all my colleagues and friends who have been a constant source of encouragement to me.

I would like to express my most sincere gratitude to my family for their constant support and tolerance.

CONTENTS

LIST OF TABLES

LIST OF CHARTS

INTRODUCTION

Hypertensive disorders complicate 5-10 % of all pregnancies. Preeclampsia is identified in 3.9 % of all pregnancies[1] (Williams 23rd).

It forms one of the deadly triad, along with hemorrhage and infection. They contribute greatly to maternal mortality rate.

In developed countries 16% of maternal deaths were due to hypertensive disorders[2]. In India around 18- 15% of maternal deaths were due to hypertensive disorders. Importantly half of these deaths were preventable[3].

Preeclampsia is a pregnancy specific syndrome related to vasospasm and endothelilal damage. Where in the patient returns back to normal following delivery.

Preeclampsia is hypertension with protienuria after 20 weeks of gestation in women with previously normal blood pressure which returns to normal within 12 weeks gestation[4].

Mild Preeclampsia is defined as hypertension associated with proteinuria, greater than 0.3 g/L in a 24-hour urine collection or 1+ by qualitative urine examination two times 6 hours apart, after 20 weeks of gestation[5] .

Proteinuria is defined as 24 hour urinary protein excretion exceeding 300 mg, a urine protein: creatinine ratio of ≥ 0.3, or persistent 30 mg / dl (1+) in dipstick two times 6 hours apart.

Diagnosis of gestational hypertension is made in women whose systolic blood pressure reaches 140 mm of hg and above or when diastolic blood pressure reaches 90 mm hg and above, for the first time after 20 weeks gestation, without protienuria . The blood pressure returns to normal by 12 weeks postpartum[6].

Abnormal laboratory findings in tests of renal, hepatic and hematological function increase the certainty of preeclampsia.

Preeclampsia often affects young and nulliparous women. The incidence is markedly influenced by race, ethnicity and has genetic predisposition. Other risk factors include obesity , multifetal gestation, thrombophilias.

Taking into consideration the various devastating complications of preeclampsia such as abruption, eclampsia, HELLP syndrome, cerebrovascular accidents and various neonatal complications, the need to curtail this disease from progressing is evident.

Hence we are committed to identify pregnant women with preeclampsia , manage them and thereby prevent adverse maternal and fetal outcome.

In India the most commonly used antihypertensives in pregnancy are methyl dopa, labetalol and nifedipine. Previously the most commonly used drug was methyl dopa. Now a days methyl dopa has been largely replaced by T.Labetalol and T.Nifedipine, due to its slower onset of action.

Both T.Labetalol and T.Nifedipine are rapid in onset and effective in the treatment of hypertension. They have minimal maternal and fetal side effects.

Hence this study is to compare the anti hypertensive efficacy of T.Labetalol and T.Nifedipine in mild preeclampsia. The feto maternal outcome were also studied.

AIMS AND OBJECTIVES

To compare the anti hypertensive efficacy of T. Labetalol with T. Nifedipine in mild preeclampsia.

To study the maternal and perinatal outcome in mild preeclampsia following treatment with T.Labetalol or T. Nifedipine.

INCLUSION CRITERIA

All antenatal women with mild preeclampsia .

EXCLUSION CRITERIA

- Gestational hypertension
- Severe preeclampsia
- Eclampsia
- Chronic hypertension
- Associated co morbidities - heart disease, diabetes mellitus, bronchial asthma, gestational diabetes mellitus, renal disease.

MATERIALS AND METHODS

The study was conducted at the Government Raja Mirasudar Hospital, Thanjavur from October 2012 to October 2013 .

100 antenatal women with mild preeclampsia were selected. Informed consent obtained. 50 women were treated with T.Labetalol. 50 women were treated with T.Nifedipine.

Thorough history and clinical examination were done. Once the diagnosis of mild preeclampsia was made, all patients were admitted. Investigations such as complete blood count, peripheral smear, blood sugar, liver function test, renal function test, prothrombin time, clotting time, bleeding time, fundus examination of eye, ultrasound abdomen were done.

Patients with blood pressure 150/100 mm of Hg and above were started on antihypertensive drug (NICE Guidelines 2011). In Group A, 50 patients were treated with T.Labetalol.In Group B, 50 patients were treated with T. Nifedipine.

Serial monitoring of blood pressure was done. Antihypertensive efficacy and feto maternal outcomes were monitored.

Control aimed to keep systolic BP <150 mm Hg and diastolic between 80-100 mm Hg (NICE Guidelines, UK- 2011).

In Group A, T.Labetalol was started with a dose of 100 mg .Blood pressure was measured 2nd hourly and the dose was increased by 100 mg every 6th hourly until adequate control was achieved. The next day the total dose required was divided and given as twice daily dosage. The same dose was continued thereafter from the 2nd day of treatment. Then blood pressure was measured four times a day.

In Group B, T.Nifedipine was started at dose of 10 mg, blood pressure was measured 2nd hourly, dose increased by 10mg 6th hourly until adequate control was achieved. Total dose was divided as thrice daily dosage from the 2nd day. The same dose continued there after. Blood pressure was measured four times a day.

Patients were enquired about imminent symptoms,body weight and urine albumin were checked every day. Antenatal Steroids were given to patients with gestational age between 28 to 34 weeks for fetal lung maturity.

Patients were counselled well about the complications and the need for good compliance. In patients with gestational age was less than 37 weeks, once adequate control was achieved and if the patient is compliant for follow up, patients were discharged.

Patients were followed up in antenatal OPD every week by measuring blood pressure and repeating all investigations. Patients were warned about imminent symptoms and were asked to report immediately.

Pregnancy was terminated at 37 weeks gestation. Patients who developed severe preeclampsia were terminated. Patients diagnosed for the first time after 37 weeks gestation were also terminated.

Antihypertensive efficacy , disease progression, gestational age at delivery, drug side effects and neo natal complications were documented.

Immediately following delivery blood pressure was measured every 2 hours for 24 hours. There after BP was measured four times a day. The antihypertensive was continued if BP was $\geq$ 150/100 mm Hg .

Patients were discharged on the 5th postnatal day if BP was under control. Patients who were on antihypertensive during the postnatal period were advised to continue the drug till 12 weeks postpartum and then tapered according to their blood pressure.

Patients were helped to make their choice about contraception.

Patients were followed up every week in postpartum centre until 12 weeks postpartum.

REVIEW OF LITERATURE

Incidence of hypertensive disorders of pregnancy is 5-10%. It is the most common condition where an otherwise healty parturient can become critically ill. The classical triad of preeclampsia is hypertension, proteinuria and edema.

Risk factors of pre eclampsia[7]:

Age: <20 years, > 35 years

Primi gravida

Genetic predisposition

Obesity

Multifetal gestation

Lower Socioeconomic status

Preeclampsia in previous pregnancy

Factor V laiden mutation deficiency

Pre existing medical diseases like chronic hypertension, renal disease, IDDM, Thrombophilias

Polyhydramnios

Hydrops foetalis

Etiology of Preeclampsia :

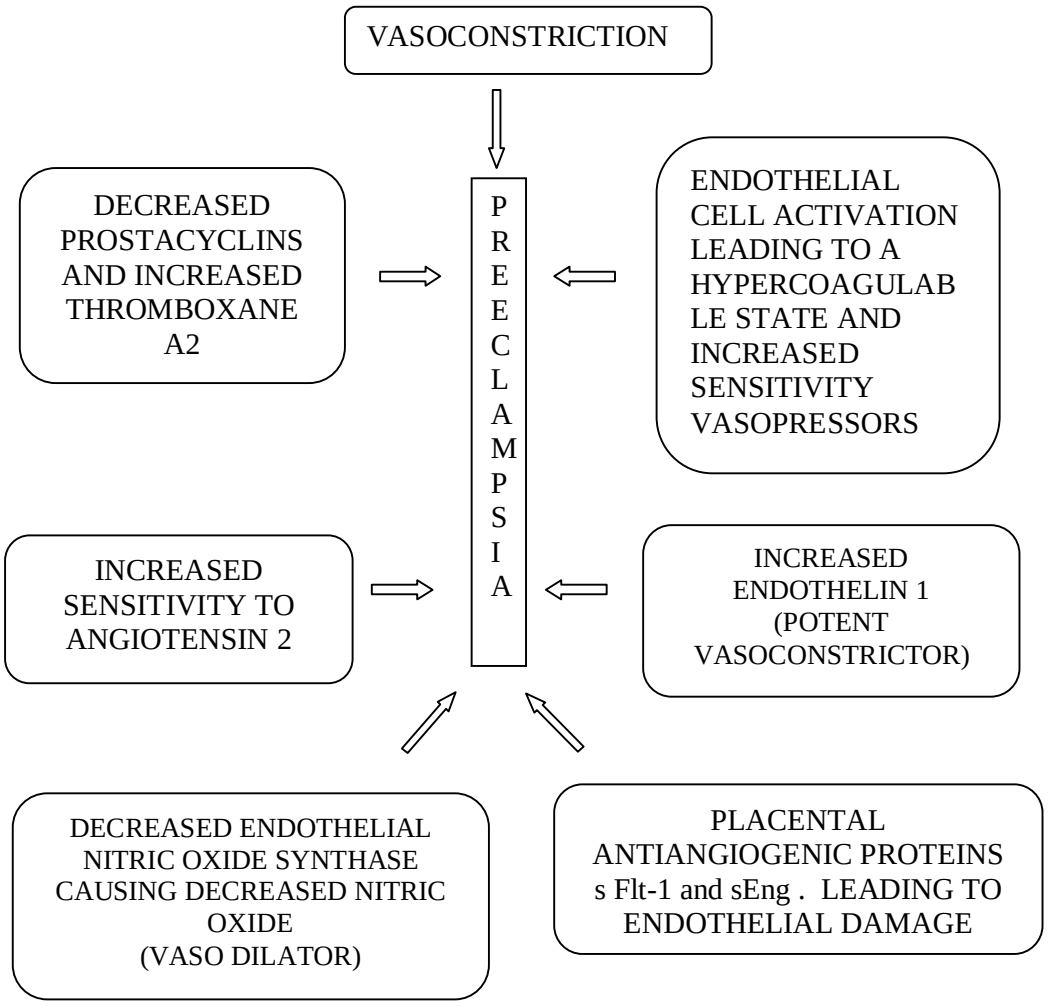
Abnormal trophoblastic invasion of uterine vessels.

Immunological dysregulation

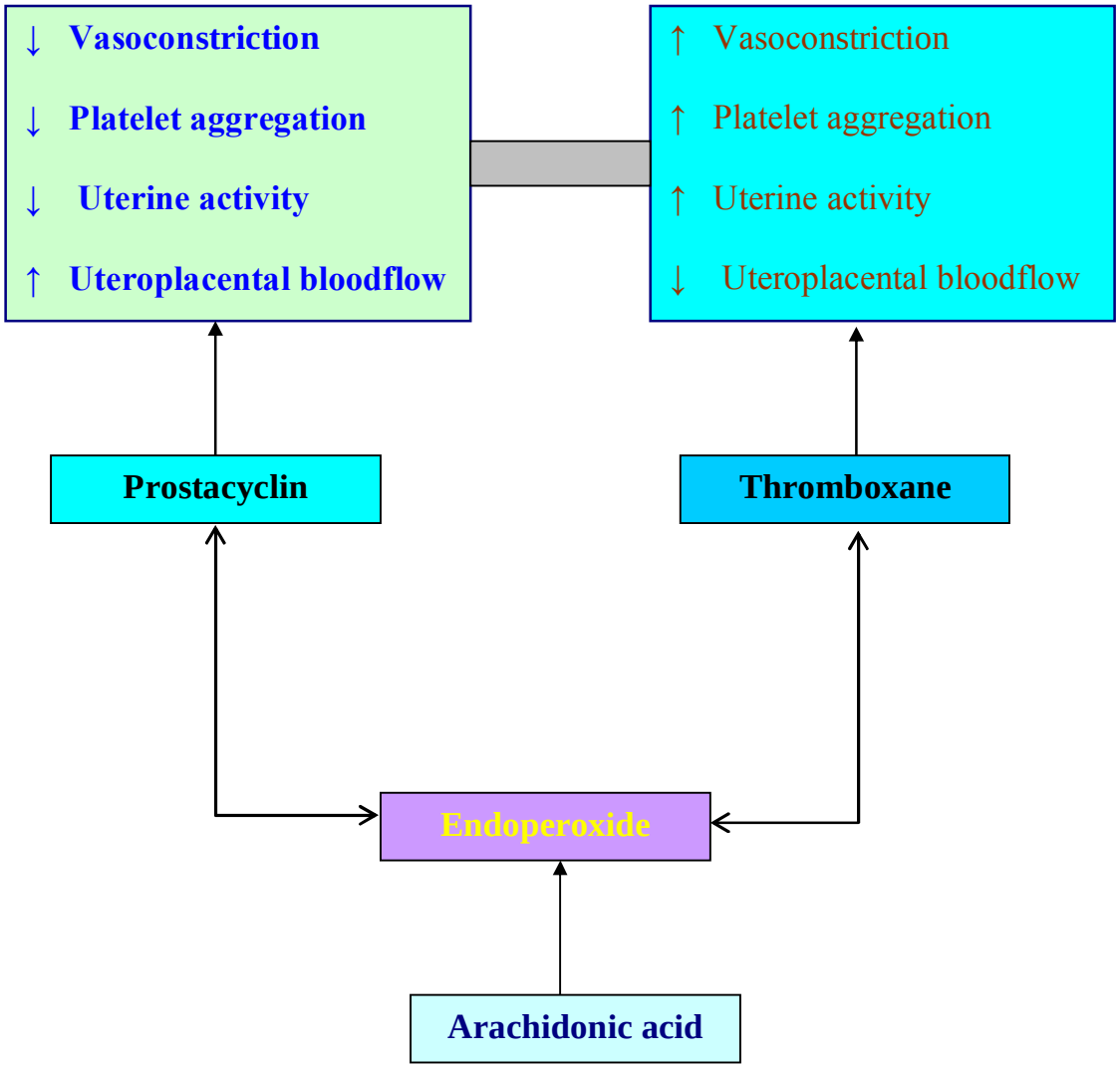
Endothelial cell dysfunction due to oxidative stress.

Genetic polymorphism

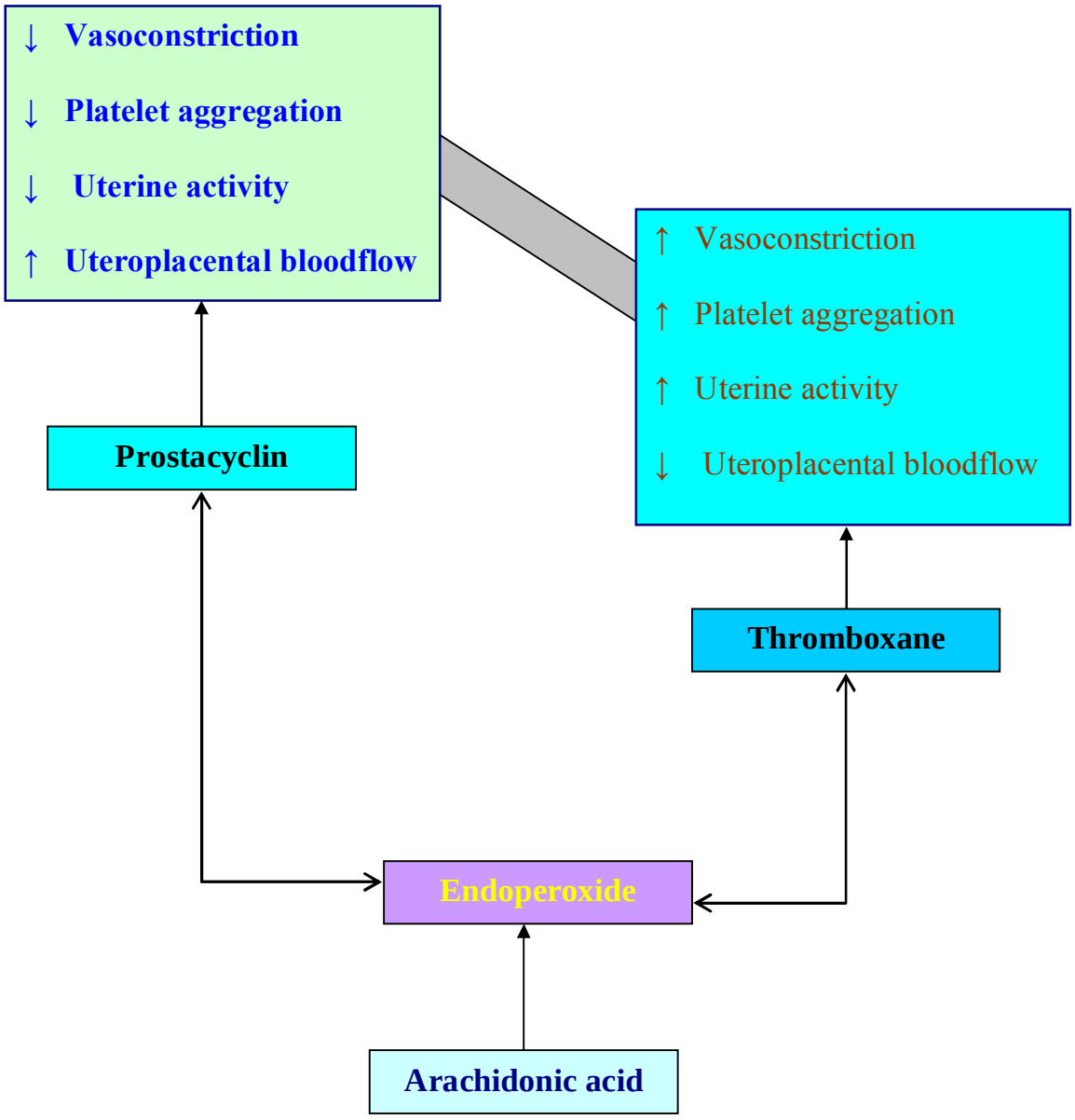
PATHOGENESIS OF PREECLAMPSIA[8]



Normal Pregnancy



PRE ECALAMPSIA[9]



Pathological changes in Preeclampsia[10]:

Brain:

Cerebral perfusion pressure plays an important role in preeclampsia. Vascular barotraumas and loss of cerebral vascular autoregulation leading to cerebral edema.

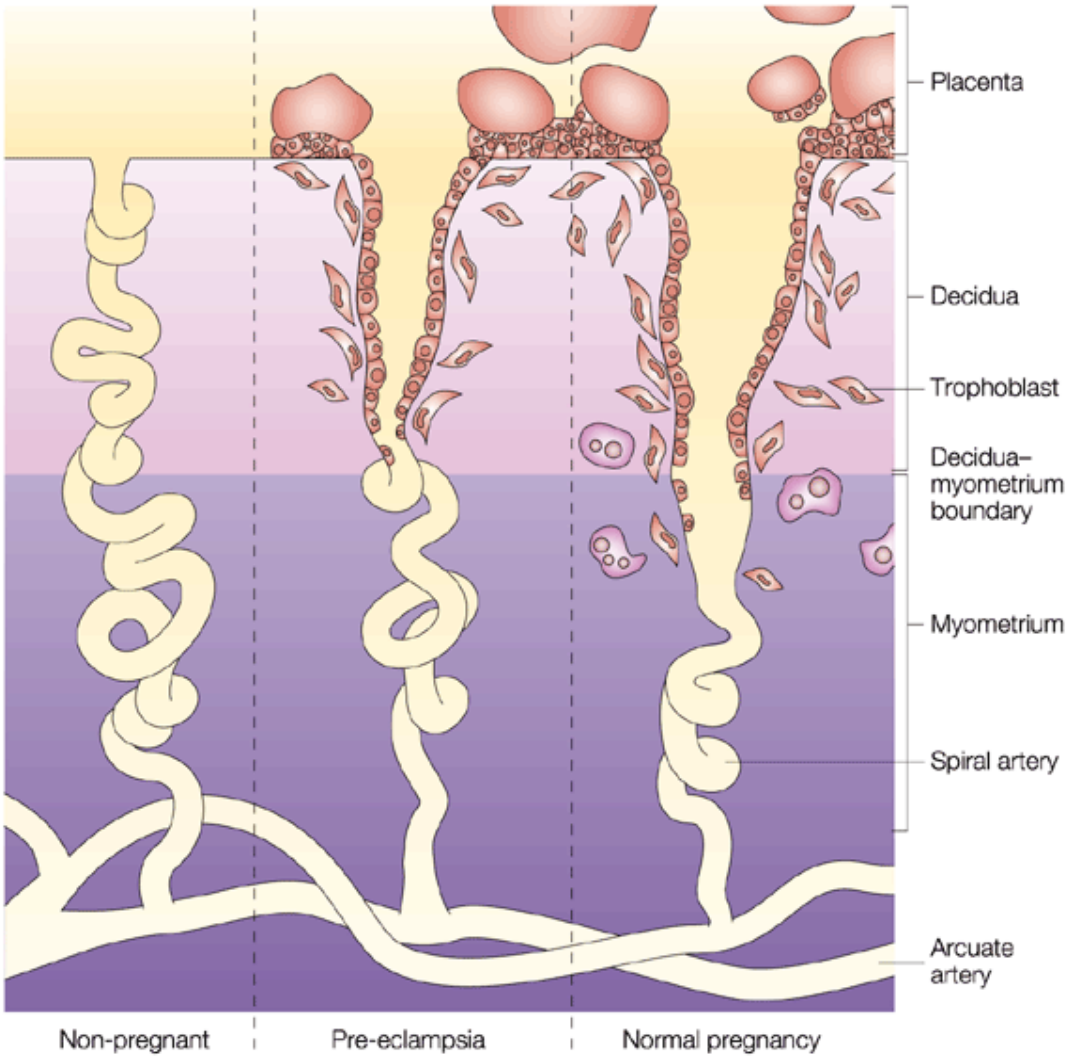
Liver:

Initially vasodilation of arterioles causing dislocation and degeneration of hepatocytes. Later intense vasospasm leading to infarction and necrosis. The incidence of haemorrhage is 60% and necrosis is 40% in eclampsia women. 50% of preeclamptic women have hepatic damages.

Kidney[11]:

a. Glomerular changes: The primary pathology is in endothelial cells which are increased in size and there by occlude the capillary endotheliosis. There is broadening of the basement membrane. Podocytes are normal.
b. Non Glomerular changes: Proximal renal tubules are dialated with tubular necrosis and juxta glomerular apparatus enlargement. Hyaline and fat deposition in tubules.

Vascular changes in preeclampsia[12]:



The spiral arteries in the myometrium does not undergo the normal pregnancy changes, that is increase in diameter due to vascular reaction to the trophoblast. They undergo acute atherosis, progressing to vessel obliteration and placental infarction.

Placental changes or hypoxic reperfusion injury causes hypoxic damage to cytotrophoblasts that leads to apoptosis and necrosis[13]. Figure[14]

Pathophysiological changes in preeclampsia:

Cardiovascular changes[15]:

The cardiovascular disturbance in preeclampsia is due to:

1. Increased cardiac afterload due to vasospasm.
2. Pathologically decreased hypervolemia of pregnancy which affects the preload of the heart.
3. Endothelial cell activation leading to extravasation of intravascular fluid into extracellular space.
4. Decreased cardiac output as a result of increased peripheral resistance.
5. Hyperdynamic ventricular function and elevated pulmonary capillary wedge pressure.

These changes along with alveolar endothelial- epithelial leak compounded by decreased oncotic pressure favours pulmonary oedema in preeclampsia.

Blood volume:

The hallmark of preeclampsia is hemoconcentration due to vasoconstriction and endothelial leakage of plasma. Thus women with preeclampsia are unduly sensitive to fluid therapy and normal blood loss at delivery.

Blood and Coagulation[16]:

Thrombocytopenia:

Platelet count of < 100000 cells/cu mm indicates a severe disease where in the pregnancy has to be terminated, as it usually worsens. Platelet count becomes normal within 3 to 5 days of delivery.

Other changes include platelet degranulation, Thromboxane A_2 release, platelet surface attraction leading to platelet aggregation.

Coagulation[17]:

Increased factor VII consumption, decreased antithrombin III, increased protein C & S leading to hypercoagulable state. Fibronectin is elevated in preeclampsia.

Endocrine changes:

In preeclampsia Atrial Natriuretic Peptide is increased.

Fluid and Electrolytes:

Due to endothelial injury there is pathological fluid retention in the extracellular fluid leading to edema.

Renal System:

The renal perfusion and glomerular filtration is reduced. This is due to the fivefold increase in renal afferent arteriolar resistance. The plasma uric acid is increased due to decreased glomerular filteration and increased tubular absorption.

Proteinuria[18]:

The threshold is <300 mg / 24 hour quantitative urine specimen. It corresponds to <30 mg / dl or trace in dipstick random specimen. A urine protein creatinine ratio of ≥ 0.3 indicates significant proteinuria. In preeclampsia it is nonselective proteinuria with abundant and coarse granular casts.

Acute renal failure:

Acute tubular necrosis and irreversible cortical necrosis are rarely associated with preeclampsia.

Hepatic System[19]:

The destructive lesions are Periportal haemorrhage, hematoma and hepatic infarction usually associated with HELLP syndrome. Women with preeclampsia complicated by HELLP syndrome have worse prognosis.

Central Nervous System:

The classical lesions include fibrinoid necrosis of arterioles, perivascular microinfarcts and haemorrhages. 60% of eclamptic women

have gross intracerebral haemorrhage. Other lesions include cortical, subcortical edema and periventricular haemorrhage.

Classification of Hypertensive disorders of pregnancy:

Gestational Hypertension

Preeclampsia: Mild & Severe

Eclampsia

Chronic Hypertension

Chronic Hypertension with super imposed preeclampsia.

FACTORS DIFFERENTIATING MILD FROM SEVERE PREECLAMPSIA[20]:

	MILD	SEVERE
Systolic BP	<160mm hg	>/160mm hg
Diastolic BP	<110mm hg	>110mm hg
Urinary protein	1+ or 2+	3+ or 4+
Urine output	>500ml/hr	<500ml/hr
Epigastric pain	No	Yes
Head ache	No	Yes
Visual disturbance	No	Yes
Pulmonary edema	No	Yes
HELLP syndrome	No	Yes
Right hypochondrial pain	No	Yes
Platelet count	>100,000 Cells/ cu mm	<100,000 Cells/ cu mm

Genetics in preeclampsia:

Preeclampsia loci sharing significant linkage are 2p[12], 2p [25], 9p[13] . Genetic imprinting with susceptibility locus on 10 q [22] is confirmed to be associated with preeclampsia[21].

MTHFR(1p36.3) , F5 (Laiden 1q23), AGT(1q42), HLA(6p21), ACE (17q23) are the genes associated with preeclampsia syndrome[22].

Prevention of preeclampsia[23]:

Supplementation with calcium, zinc, magnesium, protein, vitamin E and C.

Fish , Evening primrose oil

Low salt diet, Diuretics, Antihypertensives

All these stratergies have been evaluated in many randomized trials but none has been proved to be clinically efficacious (Sibai et al. 2009).

The use of low dose aspirin has to be individualized due to its marginal benefits in delaying the onset of preeclampsia[24] (CLASP Trial).

Biophysical tests for prediction of preeclampsia[25]:

Uterine artery doppler

Roll over test

Angiotensin II injection test

Isometric exercise

Mid pregnancy Mean Arterial Pressure

Increased maternal serum uric acid

- These tests are sensitive in the prediction of preeclampsia but not specific.
- Best available test is uterine artery doppler . The presence of persistent diastolic notching at18- 22 weeks . It is 96% specific and 76% sensitive in predicting preeclampsia.

Circulating markers of oxidative stress in preeclampsia[26]

- MDA levels 1000- 5000 times higher in women with preeclampsia.
- KTP (carboxy terminal telopeptide of type 1 collagen)
- PICP (carboxy terminal polypeptide of type 1 collagen)
- Markers of bone reabsorption and bone formation are greater in women with preeclampsia.
- Increased second trimester MSAFP/beta HCG
- Decreased urinary calcium excretion.
- Higher fasting insulin levels
- Hyper triglyceridemia
- Fibronectins
- Hyperhomocysteinemia
- Fetal free Deoxy ribo Nucleic Acid

These markers of oxidative stress have been evaluated but they have limited value in the prediction of preeclampsia.

Maternal complications of preeclampsia:

HELLP Syndrome

Eclampsia

Disseminated intravascular coagulation

Abruptio placenta

Acute renal failure

Ascites

Pulmonary edema

Pleural effusion

Cerebral edema

Retinal detachment

Laryngeal edema

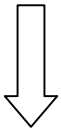
Subscapular liver haematoma

ARDS

Maternal death

Management protocol for mild preeclampsia[27]:

Maternal and fetal evaluation



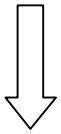
≥ 37 weeks gestation (or)

≥ 34 weeks gestation with

Labour / Premature rupture of membranes

Abnormal fetal heart rate

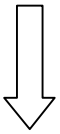
} Delivery



No (or)

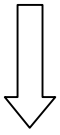
< 34 weeks of gestation

- Inpatient or outpatient
- Evaluation and management



Worsening of maternal or fetal status (or)

Gestation ≥ 37 weeks



Delivery

Management:

According to National Institute of Clinical Excellence guidelines (NICE , UK) January 2011, patients with blood pressure 150 - 159 / 100-109 mmHg are managed as out patients with antihypertensives[28].

The first line of management is with T.Labetalol to keep systolic pressures below 160mm of hg and diastolic pressures between 80 to 100 mm hg. The alternative antihypertensives are T.Alpha Methyl dopa and T.Nifedipine[29] .

According to Peter Von Dadelzen, et al in a meta analysis in 2007 the ideal agent in rural and remote setting must be administered orally, must be able to produce smooth reliable reduction of blood pressure with rapid onset of action and minimal overshoot. The drug must have preferential CNS vascular effect with no maternal or fetal toxicity. Thus T.Nifedipine and T.Labetalol will be the ideal drugs.

The interventional package should include one or two oral antihypertensives. The choice lies between T. Nifedipine and T.Labetalol[30].

According to Marko Folic et al. (2008) , all hypertensive disorders in pregnancy have increased maternal and perinatal risks, but the relation between benefits and risks associated with antihypertensive agent in pregnancy have not been defined.

From a wide palette of drugs the most acceptable antihypertensives are T. Methyl Dopa, T. Labetalol and T. Nifedipine[31].

Now a days T.Methyl dopa is widely replaced by T. Labetalol and T. Nifedipine due to its delayed onset of action.

Reena Verma et al. (2012) conducted a prospective randomized control study on 90 antenatal women with gestational hypertension comparing the efficacy, safety and tolerability of T. Labetalol and T.Methyl Dopa.

In this study it has been proved that T. Labetalol is equally efficacious and better tolerated when compared to T. Methyl Dopa. Hence T.Labetalol is preferred over T. Methyl Dopa[32].

T. Labetalol has an added advantage over T. Methyl Dopa as it reduces the blood pressure without significantly affecting the cardiac output and heart rate. Hence it improves the uteroplacental blood flow and fetal oxygenation. Thus the incidence of hyaline membrane disease is lower with T. Labetalol.

Tyagi et al. (2013) conducted a prospective study comparing the safety, efficacy and fetomaternal outcome of T.Nifedipine and T.Methyldopa. A total of 80 antenatal women with preeclampsia were included in the study. The management was based on a step wise protocol. Antenatal women were screened and risk factors closely monitored. The maternal condition was stabilized and the delivery was initiated at the best time for both mother and baby.

Nifedipine was more advantageous than Methyldopa as there was better and quicker control of blood pressure. Nifedipine also had longer duration of pregnancy, lesser side effects and improved fetal outcomes. Nifiedipine showed better action on lipid profile which is critical in preeclampsia patients.

Nifedipine was better and more effective on maternal and fetal outcomes than Methyldopa[33].

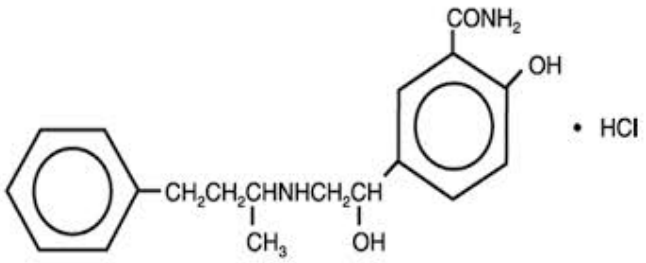
The other advantage of T. Nifedipine was its tocolytic property in addition to the antihypertensive effect in preterm patients[34].

Hence this study was conducted to compare the efficacy and feto maternal outcome of T.Labetlol and T.Nifedipine in mild preeclampsia.

Labetalol [35]

Labetalol hydrochloride is an adrenergic antagonist with selective alpha blockade and non selective beta blockade in a single substance.

Chemical structure:



Labetalol hydrochloride chemically contains 2-hydroxy-5-[1-hydroxy-2-[(1-methyl-3-phenylpropanol)amino)]ethyl benzamide as has the above structure.

The empirical formula for Labetalol hydrochloride is $C_{19}H_{24}N_2O_3 \cdot HCl$ with molecular weight of 364.9 . It exists as two diastereoisomeric pairs. Dilevolol, R-R' stereoisomer constitutes 25% of racemic labetalol. Labetalol is a white or off white water soluble crystalline powder.

Dosage:

100 mg, 200 mg, 300 mg Tablets are available.

Clinical Pharmacology:

The ratio of alpha to beta blockade are 1:3 and 1:7 following oral and intravenous administration respectively. It is a competitive α_1 and β adrenergic blocker.

Pharmacodynamics:

The alpha receptor blocking property is demonstrated by attenuation of effect of phenylephrine and by cold pressor test.

The β_1 receptor blockade is demonstrated by attenuation of tachycardia by isoproterenol or exercise. B_2 receptors blockade is shown by attenuation of hypotension by isoproterenol.

Both these properties contribute to decrease in blood pressure in hypertensive patients. Labetalol produces dose dependent fall in blood pressure without causing tachycardia.

The peak effect of single dose of Labetalol is seen in 2 to 4 hours and duration lasts for 8 hours. With twice a day dosing the maximum steady state blood pressure response occurs in 24- 72 hours.

The antihypertensive efficacy of Labetalol has a linear correlation with the logarithm of plasma concentration of Labetalol.

Pharmacokinetics[36]:

The bioavailability of T. Labetalol is 100% following oral administration. The absolute bioavailability is 25% that is the fraction of the drug reaching systemic circulation when compared to intravenous Labetalol which is 100%. This is due to high first pass metabolism.

The $t_{½}$ of Labetalol following oral administration is 6-8 hours. In patients with impaired hepatic or renal function the elimination half life is not altered, but metabolism is diminished.

Labetalol is metabolized by conjugation to glucuronides. It is excreted via urine, bile and faeces.

Labetalol has been shown to cross the placental barrier in humans.

Contraindications:

Bronchial asthma

Overt cardiac failure

Heart block

Cardiogenic shock

Hypersensitivity

Used with caution in diabetes and liver diseases.

Drug interactions:

2-3% of patients taking Labetalol along with tricyclic antidepressants experience tremors. Labetalol blunts the bronchodialator effects of β adrenergic agonists hence the dose of bronchodilator has to be increased. Cimetidine increases the bioavailability of Labetalol. Digitalis along with Labetalol increases the risk of bradycardia. Labetalol blunts the reflux tachycardia produced by nitroglycerine.

Labetalol in pregnancy[37]:

Teratogenic effects:

- Belongs to category C approved by FDA.
- No fetal malformations studied so far.
- No decrease in uteroplacental blood flow.
- No evidence of drug related harm to the fetus.

- Crosses the placenta and enhance the pulmonary maturity in fetus, hence incidence of respiratory distress syndrome is reduced.
- Some studies have shown association with IUGR but not yet proved.

Labour and delivery:

Labetalol does not affect the usual course of labour and delivery.

Lactation:

The American academy of paediatrics classifies Labetaol as compatible with breast feeding. 0.004% of maternal dose are excreted in breast milk .There are no side effects observed in infants. Long term studies of Labetalol are yet to be studied.

Adverse effects:

According to USA therapeutic trial data base for adverse reaction, clinical trials were conducted in patients utilizing various daily dosage of oral Labetalol upto the maximum of 2400 mg. About 2850 patients were included in the study.

The following adverse effects were noted in the descending order:

Dizziness

Fatigue

Nausea

Vomiting

Dyspepsia

Parasthesia

Nasal stuffiness

Edema

These complications were increased with daily dosage of ≥ 900 mg. Other complications are:

Hypotention, bradycardia, fever, hepatitis, bronchospasm, A-V block, allergy, hypoglycemia, agranulocytosis.

Over dosage:

Over dosage causes postural hypotension and bradycardia. Gastric lavage and emetics must be given following oral ingestion of Labetalol. Atropine for bradycardia, digitalis for heart failure, nor epinephrine for hypotension, epinephrine for bronchospasm and diazepam for seizures can be given.

In severe beta blocker over dose, glucagon 5-10 mg rapid IV can be given. Haemodialysis and peritoneal dialysis removes only < 1% of Labetalol.

Dosage:

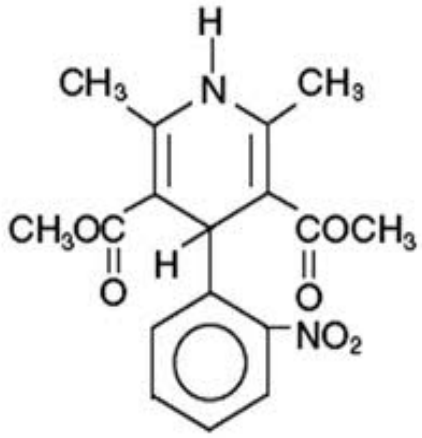
Recommended initial dose is 100mg twice daily. Usual maintainance dose is between 200- 400 mg twice daily. Maximum dose is 2400 mg per day.

The drug should be stored between 2^{o} and 30^{o} C.

Nifedipine[38]

Nifedipine was the first of the dihydropyridine group of calcium channel blockers licensed for use.

It was first developed by Bayer in 1970 and used as an antihypertensive. It had a severe side effect profile of hypotension. Hence newer long acting, modified release formulations were developed.



Nifedipine is 3,5-Pyridinedicarboxylic acid, 1,4-dihydro-2,6-dimethyl-4-(2-nitrophenyl)-,dimethyl ester. C17H18N2O6 346.33

Nifedipine is a yellow crystalline substance, partially soluble in water and soluble in ethanol. It has a molecular weight of 346.3.

Mechanism of action:

Nifedipine is a slow L type calcium channel blocker of calcium ion and inhibits the influx of calcium ions into cardiac muscle and smooth

muscle. The unique property is that, it does not affect the serum calcium concentration.

Pharmacokinetics:

Nifedipine is rapidly and fully absorbed after oral ingestion. The onset starts in 10 minutes and peaks in 30 minutes. Bioavailability increases proportionally from dose 10 to 30 mg and then it does not change significantly. It is highly protein bound 92- 98%. The half life of Nifedipine is 2 hours. It is metabolized in the liver. 80% of Nifedipine and its metabolites are eliminated through kidneys.

The protein binding is reduced in renal and hepatic disease. The metabolism is affected in hepatic disease.

Pharmacokinetics:

L type slow calcium channel blockers, nifedipine causes negative inotropic effect on heart. It inhibits the calcium influx into smooth muscle cells and myometrial cells, there by producing vasodilation and tocolysis. As a reflex to vasodilation there is tachycardia.

L type voltage sensitive calcium channels are present in cardiac and smooth muscle, SA and AV node. The channels are located on the surface of plasma membrane of these cells. Nifedipine binds to these cells and blocks the entry of calcium ions there by causing relaxation. At therapeutic doses, nifedipine does not depress cardiac function.

Pregnancy[39]:

Category C drug by FDA.

No teratogenicity has been proved in pregnant women till date[40].

Modified release preparations have good therapeutic effect and better side effect profile. The short acting sublingual form has been withdrawn from the market due to hypotension.

A review by Levin AC et al, the use of nifedipine in antenatal women, concluded that apart from being an effective antihypertensive it also reduces the risk of cerebral haemorrhage and end organ damage. Perinatal effects are yet to be established[41].

Dose:

10 mg is given initially followed by 20 mg given every 20- 30 minutes until a maximum dose of 120 mg/day.

In a study by Houtzager BA et al, long term effect in children born to mothers who were treated with nifidepine during pregnancy were studied. There were no abnormalities detected.

Labour:

It acts as a tocolytic at doses $\geq$ 20 mg.

Lactation[42]:

Nifedipine has no effect on milk composition. Less than 5% of therapeutic dose is seen in breast milk. The American academy of pediatrics classifies nifedipine as compatible with breast feeding.

Adverse effects:

Sudden hypotension is one of the greatly feared side effects of nifedipine. It is most commonly associated with sublingual usage.

Peripheral edema, dizziness, nausea, headache, weakness, transient hypotention, palpitation, nasal and chest congestion, diarrhoea, constipation, rigors, muscle cramps are noted.

Among these the most common side effects include:

- Flushing
- Head ache
- Chest pain

Toxicity[43]:

The most important toxicity is direct extension of its therapeutic action. Excessive inhibition of calcium influx causes cardiac depression, cardiac arrest and heart failure.

Patients receiving beta blockers are sensitive to cardio depressant effects of calcium channel blockers. Hence both together has to be used with caution.

Other uses[44]:

- Angina and Reynauds phenomenon.
- Supraventicular tachyarrythmias.

- Hypertrophic cardiomyopathy.
- Tocolysis
- Migraine

Advantages of Nifedipine[45]:

- More potent coronary and peripheral vasodilator
- Improves arterial compliance
- Can be used in patients with bronchial asthma and peripheral vascular disease
- No effect on lipid profile, uric acid, glucose metabolism
- Tolerance does not occur

Contraindications[46]:

- Unstable angina
- Left ventricular failure
- Aortic stenosis
- Obstructive cardiomyopathy

OBSERVATIONS AND RESULTS

TABLE 1

AGE OF THE PATIENT

Age	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(%)*	
Below 20yrs	4	8.0%	3	6.0%	7	7.0%	X^2=.385 Df=3 .943>0.05 Not Significant
21 to 25yrs	26	52.0%	25	50.0%	51	51.0%	
26 to 30yrs	12	24.0%	12	24.0%	24	24.0%	
31 yrs & above	8	16.0%	10	20.0%	18	18.0%	

There was no statistical difference between both groups.

Hence both groups were comparable.

Most common in age group in both groups were between 21 and 25 years.

CHART 1

AGE OF THE PATIENT

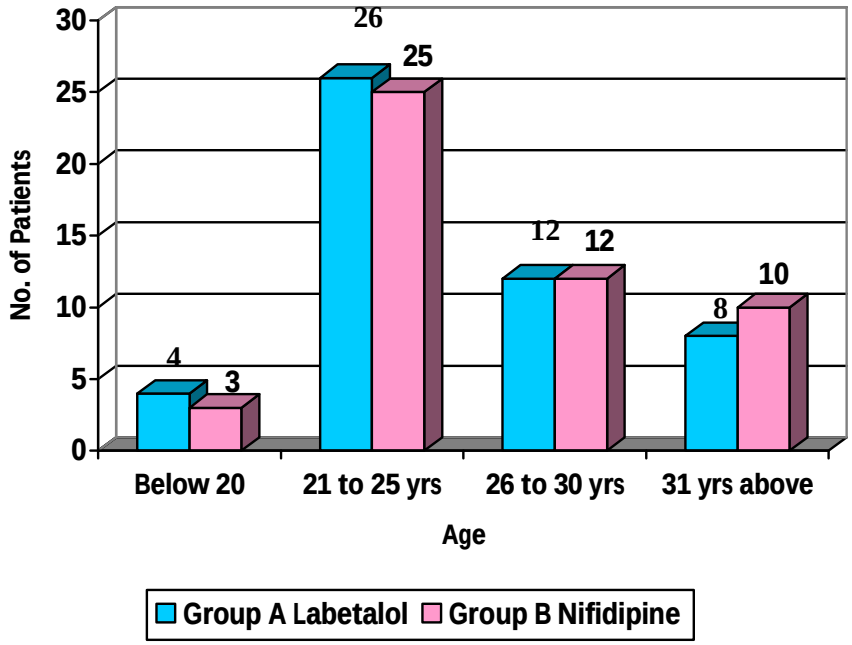


TABLE 2

BMI OF THE PATIENT

BMI	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(100%)*	
Below 18	7	14.0%	8	16.0%	15	15.0%	X^2=.404 Df=2 .817>0.05 Not Significant
18 to 24	19	38.0%	16	32.0%	35	35.0%	
Above 25	24	48.0%	26	52.0%	50	50.0%	

BMI:

There was no statistical difference between both groups.

Hence both groups were comparable.

In both **the groups most of the patients were overweight with BMI more than 25.**

CHART 2

BMI OF THE PATIENT

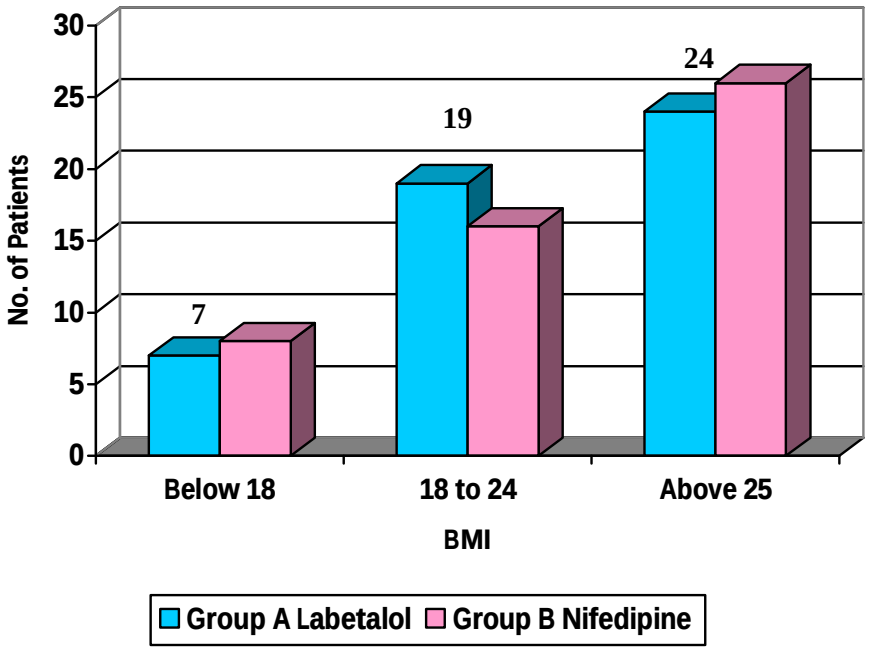


TABLE 3

OBSTETRIC SCORE OF THE PATIENT

Obstetric score	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(100%)*	
G1	26	52.0%	24	48.0%	50	50.0%	X^2=.480 Df=3 .923>0.05 Not Significant
G2	14	28.0%	16	32.0%	30	30.0%	
G3	7	14.0%	8	16.0%	15	15.0%	
G4	3	6.0%	2	4.0%	5	5.0%	

GRAVIDA:

In group A majority 52% were primi gravida.

In group B majority 48% were primi gravda

CHART 3

OBSTETRIC SCORE OF THE PATIENT

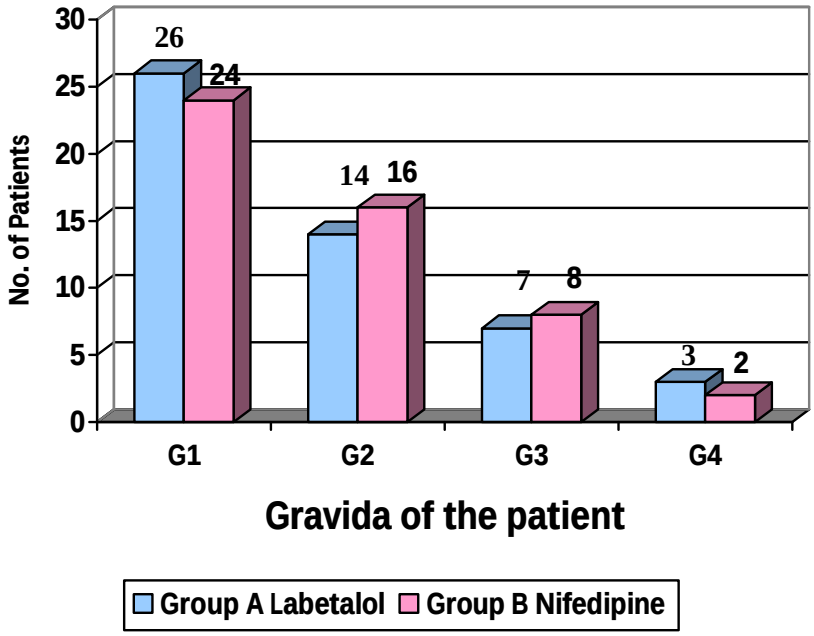


TABLE 4

GESTATIONAL AGE AT DIAGNOSIS

Gestational age at diagnosis (Weeks)	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(100%)*	
28 to 33wks	10	20.0%	10	20.0%	20	20.0%	X^2=.000 Df=2 1.000>0.05 Not Significant
34 to 36wks	30	60.0%	30	60.0%	60	60.0%	
Term	10	20.0%	10	20.0%	20	20.0%	

GESTATIONAL AGE:

In group A majority were diagnosed between 34 and 36 weeks.

In group B majority were diagnosed between`34 and 36 weeks.

CHART 4

GESTATIONAL AGE AT DIAGNOSIS

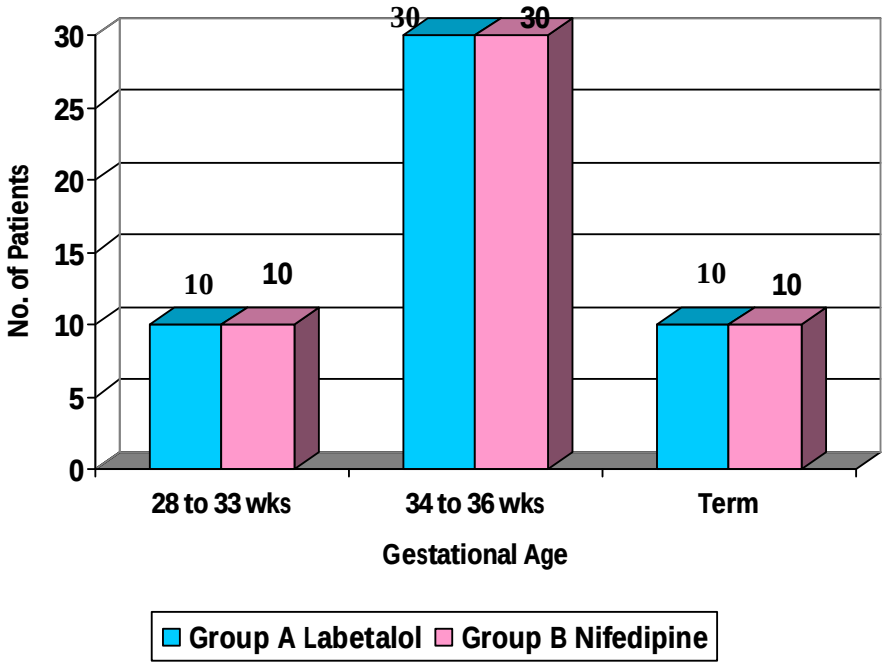


TABLE 5

REQUIRED DOSE OF THE DRUG –GROUP A T.LABETALOL

Dose (mg)	Group A	
	(n=50)	*(100%)*
200	17	34.0%
300	13	26.0%
400	11	22.0%
500	7	14.0%
600	2	4.0%

- **Majority of the patients required dose between 200 and 400 mg.**

CHART 5

REQUIRED DOSE OF T.LABETALOL

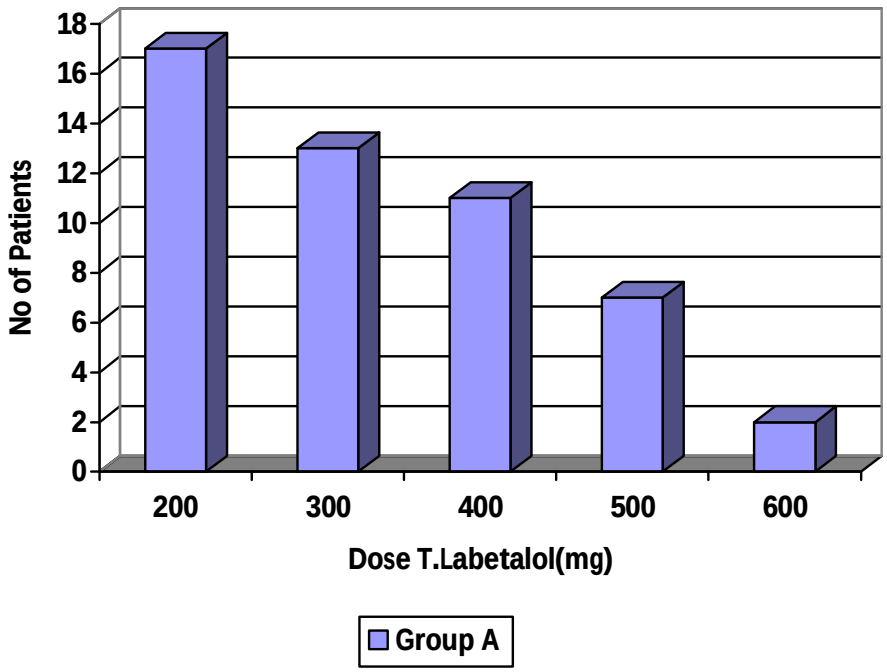


TABLE 6

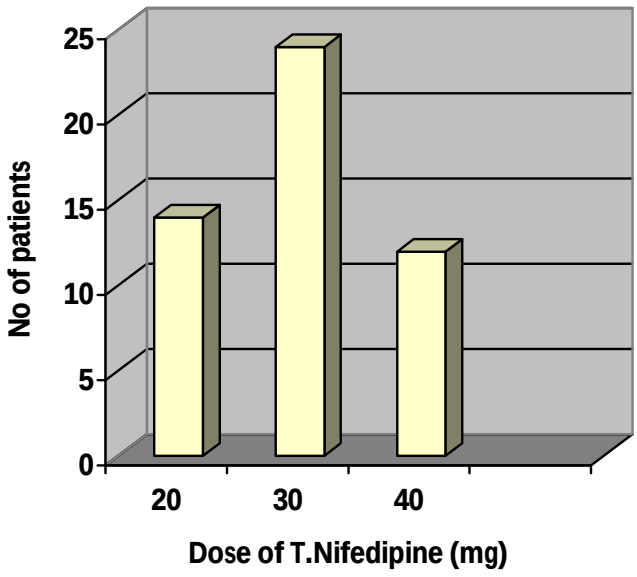
REQUIRED DOSE OF THE DRUG-GROUP B T.NIFEDIPINE

Dose (mg)	Group B	
	(n=50)	*(100%)*
20	14	28.0%
30	24	48.0%
40	12	24.0%

- **Majority of the patients required dose between 20 and 30 mg.**

CHART 6

REQUIRED DOSE OF T.NIFEDIPINE



GROUP B

TABLE 7

CONTROL OF BLOODPRESSURE

Control BP	Group A		Group B		Total		Statistical inference
	(n=50)	*(100%)*	*(n=50)*	*(100%)*	*(n=100)*	*(100%)*	
Control	50	100.0%	50	100.0%	100	100.0%	Nil

CONTROL OF BLOODPRESSURE:

In group A all 50 patients had adequate control of bloodpressure.

In group B all 50 patients had adequate control of bloodpressure.

CHART 7

CONTROL OF BLOOD PRESSURE

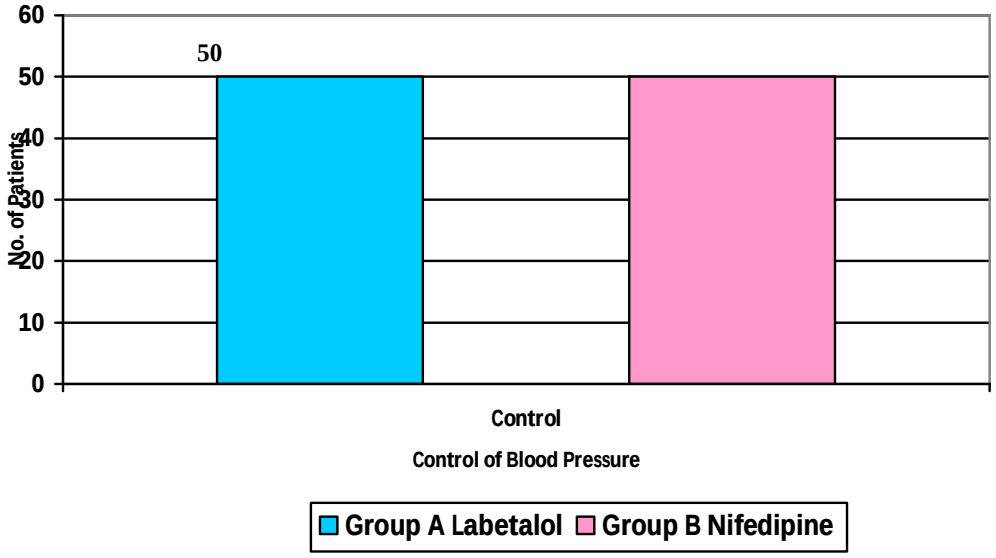


TABLE 8

PROGRESSION TO SEVERE PRE ECLAMPSIA

	Group A No=50	%	Group B No=50	%	Total	%	Statistical inference
Progression to severe preeclampsia	7	14	10	20	17	17	X2=0.870 Df=2 0.602>0.05 Not significant

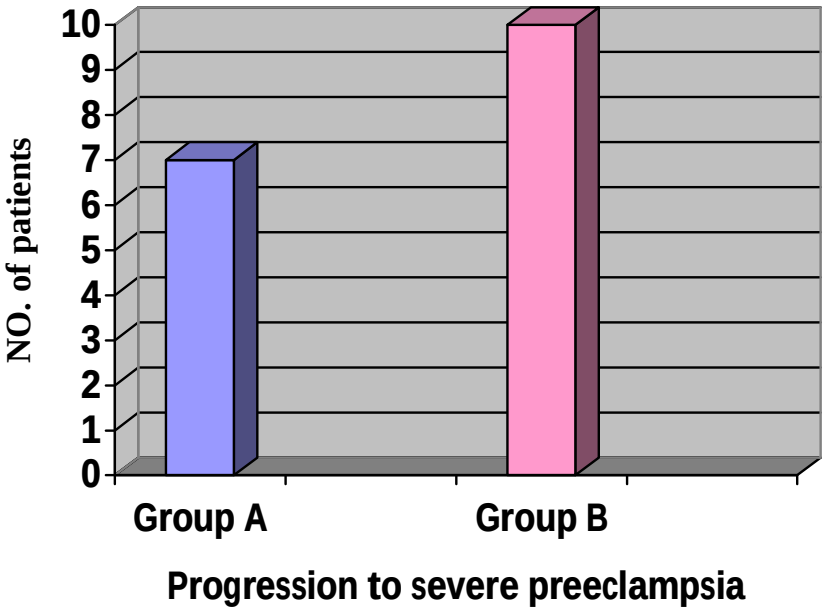
Among the patients in group A taking Tab.Labetalol 14% progressed to severe preeclampsia.

Among the patients in group B taking Tab...Nifedipine 20% progressed to severe preeclampsia.

The difference was not statistically significant.

CHART 8

PROGRESSION TO SEVERE PRE ECLAMPSIA



Group A-Labetalol Group B-Nifedipine

TABLE 9

WORSENING OF PROTEINURIA

Proteinuria >2+	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(%)*	
2+	1	2.0%	2	4.0%	3	3.0%	X^2=1.375 Df=2 .503>0.05 Not Significant
3+	0	0%	1	2.0%	1	1.0%	

WORSENING OF PROTEINURIA:

In group A 2% had worsening of proteinuria. They developed urine albumin 2+.

In group B 6% had worsening of proteinuria. Of which 4% developed urine albumin 2+. Remaining 2% developed urine albumin 3+.

The difference was not statistically significant.

CHART 9

WORSENING OF PROTEINURIA

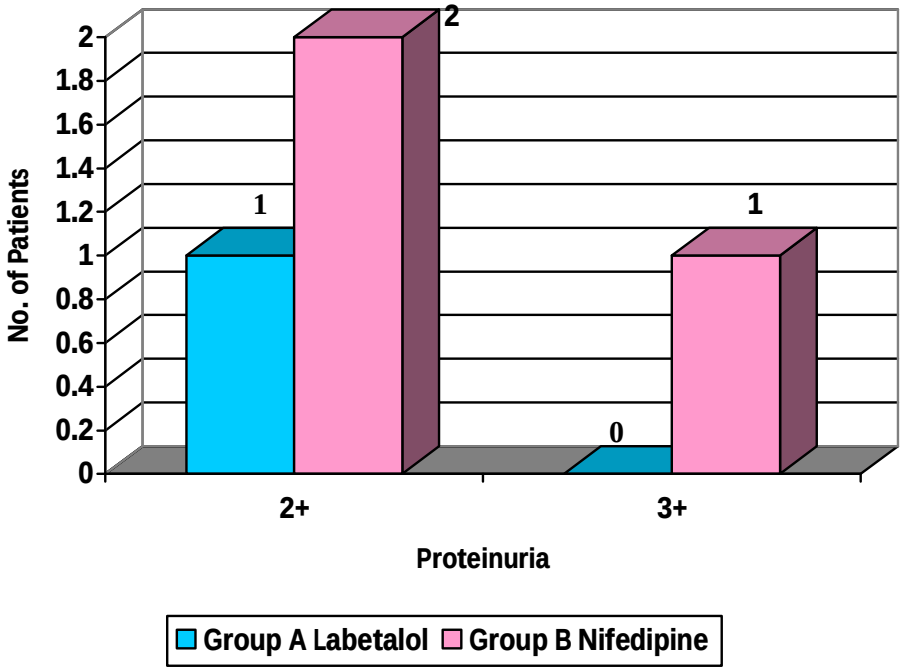


TABLE 10

DEVELOPMENT OF UTERO PLACENTAL INSUFFICIENCY

IUGR/Oligohy-dromnios/IUD	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(%)*	
IUGR	1	2.0%	3	6.0%	4	4.0%	X^2=2.244 Df=3 .523>0.05 Not Significant
Utero Placental insufficiency	2	4.0%	3	6.0%	5	5.0%	
IUD	1	2.0%	0	.0%	1	1.0%	

DEVELOPMENT OF UTERO PLACENTAL INSUFFICIENCY:

In group A 2% progressed by developing IUGR . 4% developed oligohydramnios. 2% had intrauterine death of the fetus.

In group B 6% progressed by developing IUGR. 6% developed oligohydramnios.

The difference was not statistically significant.

CHART 10

DEVELOPMENT OF UTERO PLACENTAL INSUFFICIENCY

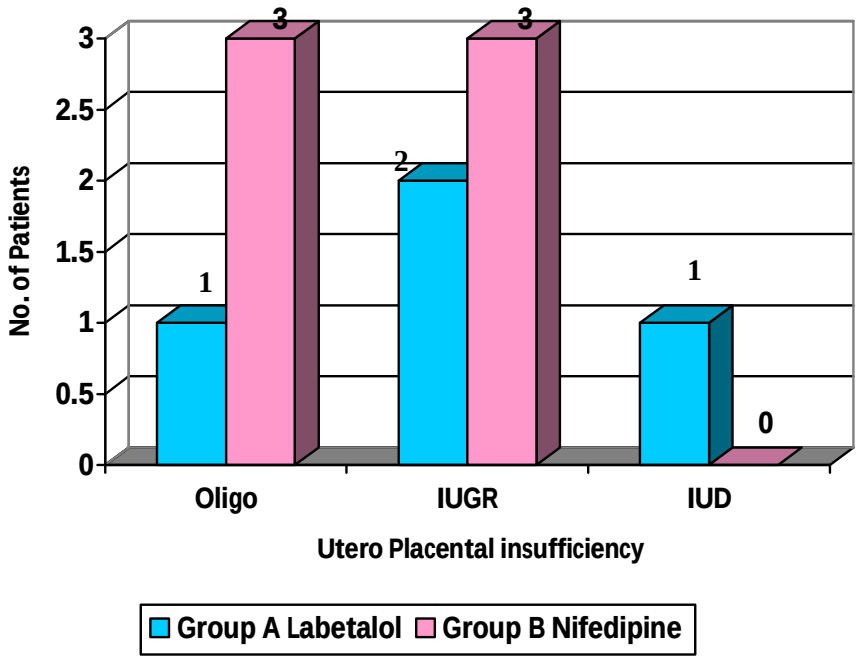


TABLE 11
DEVELOPMENT OF PAPILLEDEMA

Papilledema	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(%)*	
	1	2.0%	0	.0%	1	1.0%	X^2=1.010 Df=1.315>0.05 Not Significant

DEVELOPMENT OF PAPILLEDEMA:

In group A 2% of the patients developed papilledema.

In group B none of the patients developed papilledema.

The difference was not significant.

CHART 11

DEVELOPMENT OF PAPILLEDEMA

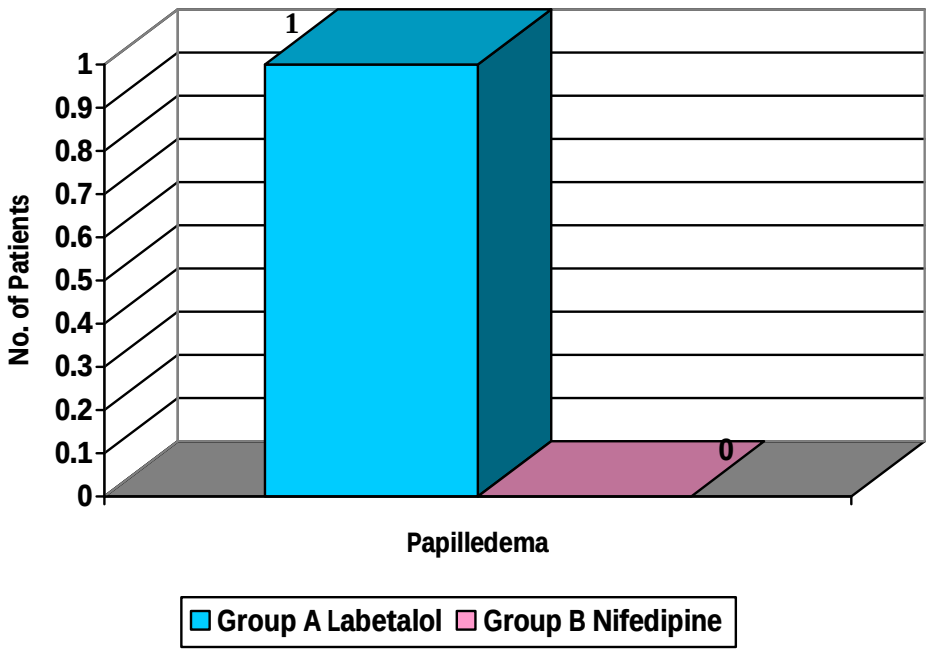


TABLE 12

ONSET OF IMMINENT ECLAMPSIA

Imminent Eclampsia	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(%)*	
1	1	2.0%	1	2.0%	2	2.0%	X^2=.000 Df=1 1.000>0.05 Not Significant

ONSET OF IMMINENT ECLAMPSIA:

In group A and group B 2% of the patients had imminent eclampsia.

CHART 12

ONSET OF IMMINENT ECLAMPSIA

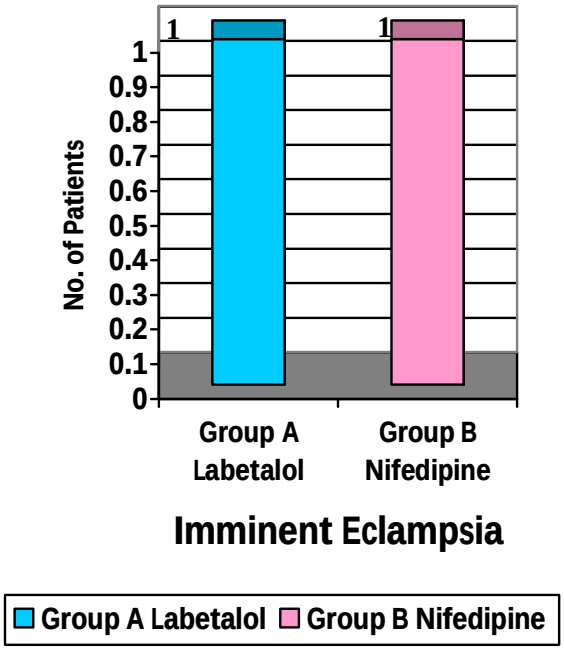


TABLE 13

DRUG SIDE EFFECTS

Chi-square test

Drug side effects	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(%)*	
Giddiness	0	0%	1	2.0%	1	1.0%	X^2=11.383 Df=3 .049<0.05 Significant
palpitation	0	0%	2	4.0%	2	2.0%	
headache	0	0%	3	6.0%	3	3.0%	

DRUG SIDE EFFECTS:

In group A none of the patients developed drug side effects.

In group B 12% of the patients had side effects. Of which 6% had headache.

4% had palpitation and 2% had giddiness.

There was statistically significant difference between the two groups.

Group B had significantly higher side effects than group A.

CHART 13

DRUG SIDE EFFECTS

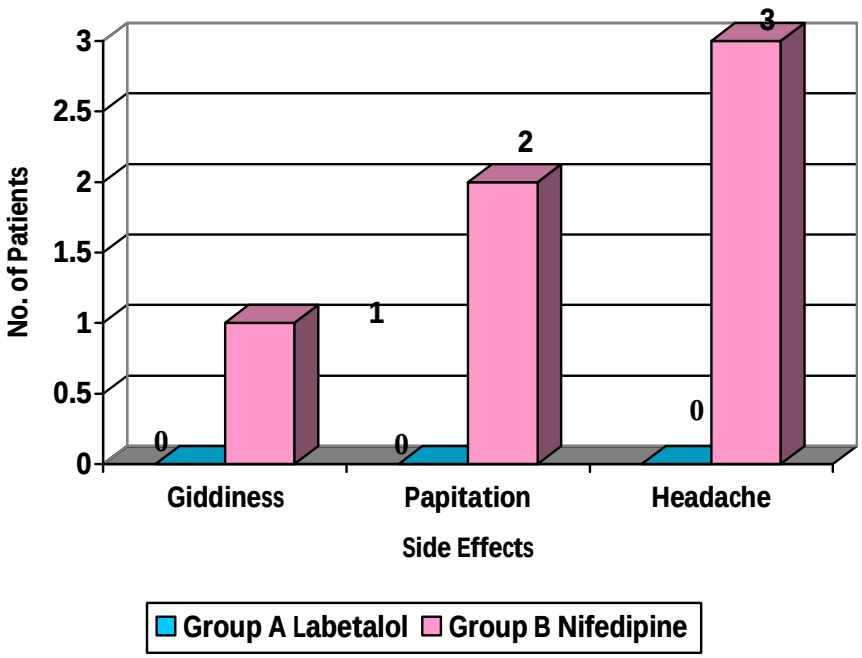


TABLE 14

GESTATIONAL AGE AT DELIVERY

Chi-square test

Gestational age at Delivery (Weeks)	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(%)*	
28 to 33wks	3	6.0%	4	8.0%	7	7.0%	X^2=.651 Df=2 .722>0.05 Not Significant
34 to 36wks	4	8.0%	6	12.0%	10	10.0%	
Term	43	86.0%	40	80.0%	83	83.0%	

GESTATIONAL AGE AT DELIVERY:

In group A 86 % delivered at term.
In group B 80% delivered at term.
There was no significant difference between the two groups.

CHART 14

GESTATIONAL AGE AT DELIVERY

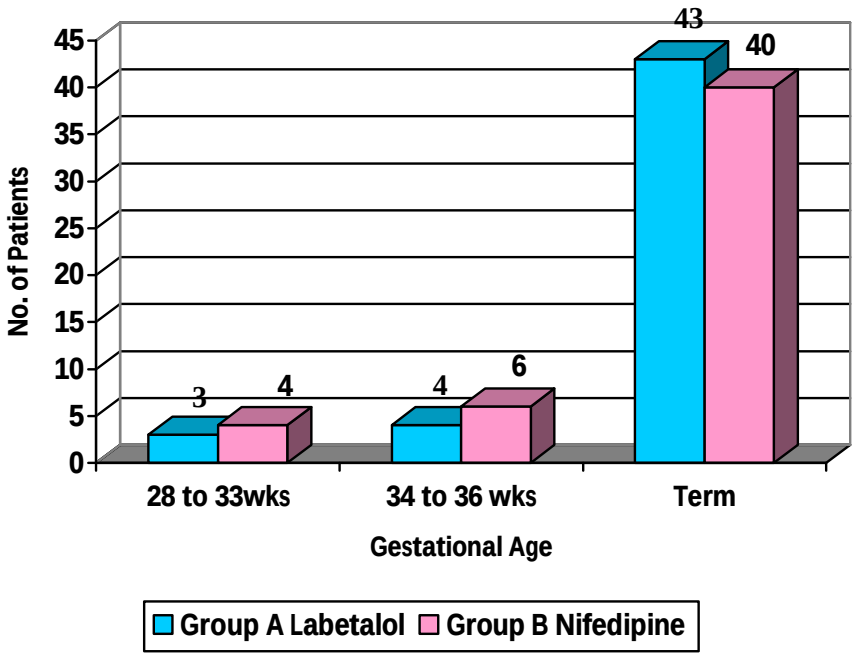


TABLE 15

MODE OF DELIVERY

Chi-square test

	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(%)*	
Vaginal	38	76.0%	35	70.0%	73	73.0%	X^2=.464 Df=2 .793>0.05 Not Significant
Emergency	7	14.0%	9	18.0%	16	16.0%	
Elective	5	10.0%	6	12.0%	11	11.0%	

CAESAREAN SECTION:

In group A 24% delivered by caesarean section. Among them 14% emergency section and 10% were taken up as elective section.

In group B 30% delivered by caesarean section. Among them 18% emergency section and 12% were taken up as elective section.

CHART 15

MODE OF DELIVERY

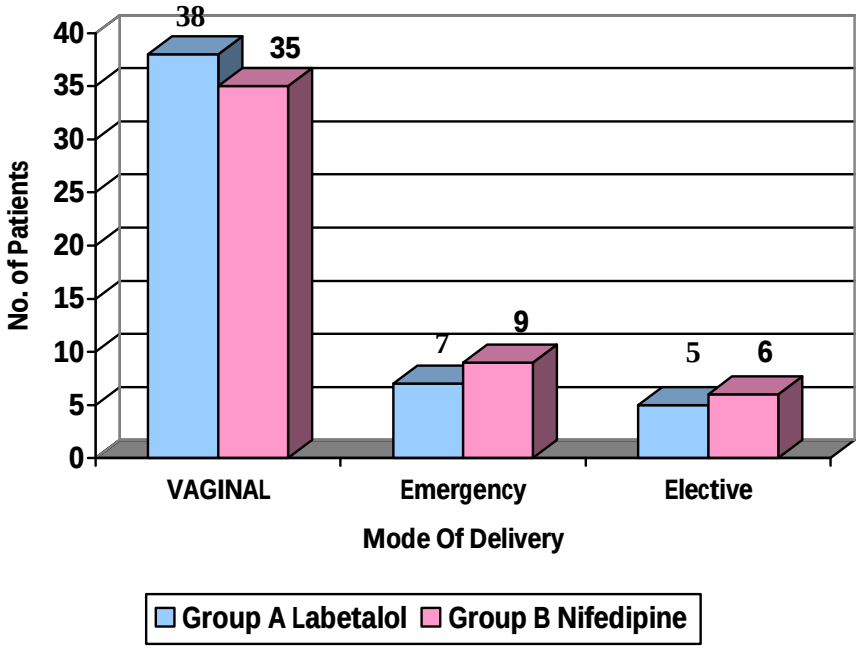


TABLE 16

MODE OF DELIVERY

VAGINAL DELIVERY

Chi-square test

Vaginal	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(%)*	
labour natural	4	8.0%	5	10.0%	9	9.0%	X^2=1.095 Df=4.895>0.05 Not Significant
labour natural with episiotomy	28	56.0%	24	48.0%	52	52.0%	
outlet forceps delivery	4	8.0%	3	6.0%	7	7.0%	
vacuum delivery	2	4.0%	3	6.0%	5	5.0%	

MODE OF DELIVERY VAGINAL DELIVERY:

In group A 76% patients delivered vaginally. Of which 12% had instrumental delivery.

In group B 70% patients delivered vaginally. Of which 12% had instrumental delivery.

CHART 16

VAGINAL DELIVERY

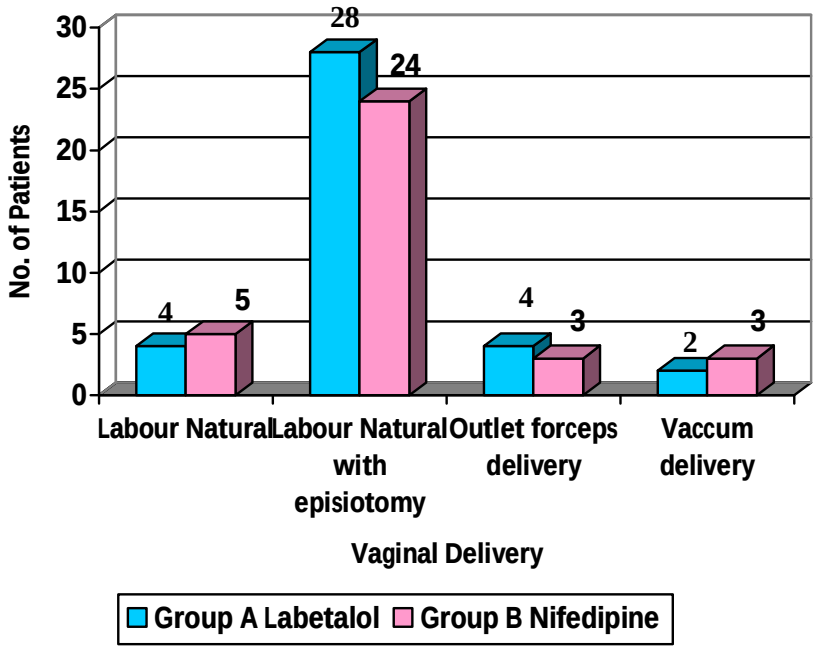


TABLE 17

NEONATAL OUTCOME

Chi-square test

	Group A		Group B		Total		Statistical inference
	(n=50)	***(%)***	***(n=50)***	***(%)***	***(n=100)***	***(%)***	
Pre term	7	14.0%	10	20.0%	17	17.0%	X^2=.638 Df=1 .424>0.05 Not Significant
Term	43	86.0%	40	80.0%	83	83.0%	

NEONATAL OUTCOME:

In group A 43 (86%) were term babies.

In group B 40 (80%) were term babies.

In both the groups all term babies had birth weight more than 3 kg.

There was no statistical difference in the neonatal outcome.

CHART 17

NEONATAL OUTCOME

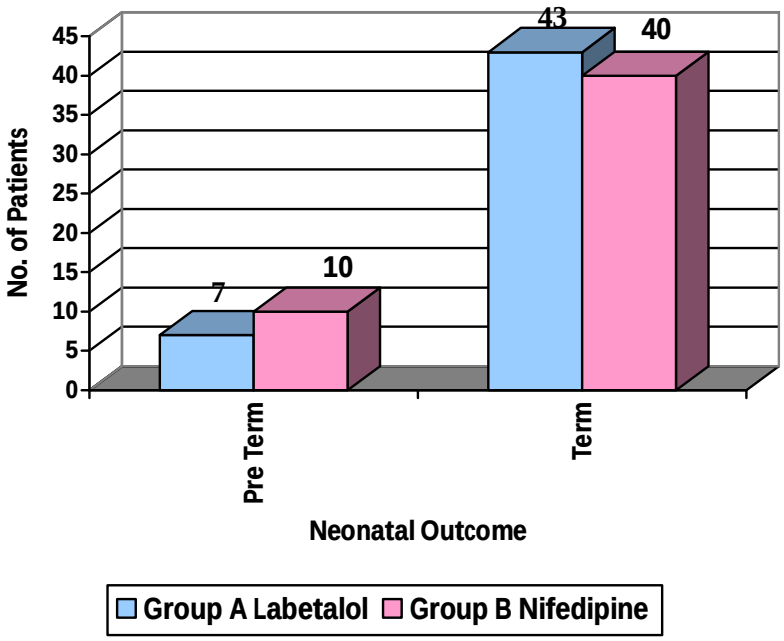


TABLE 18

BIRTH WEIGHT OF BABIES

Chi-square test

Birth weight(Kg)	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(%)*	
>2.5kg	43	86.0%	40	80.0%	83	83.0%	X^2=.651 Df=2 .722>0.05 Not Significant
2 to 2.5kgs	4	8.0%	6	12.0%	10	10.0%	
>2kgs	3	6.0%	4	8.0%	7	7.0%	

BIRTH WEIGHT OF BABIES:

In group A among the 14% pre term babies delivered 6% had birth weight less than 2 kg and the remaining 8% had birth weight between 2 and 2.5 kg.
In group B among the 20% pre term babies delivered 8% had birth weight less than 2 kg and the remaining 12% had birth weight between 2 and 2.5 kg.
In both the groups ,all term babies had birth weight more than 2.5 kg.

CHART 18

BIRTH WEIGHT OF BABIES

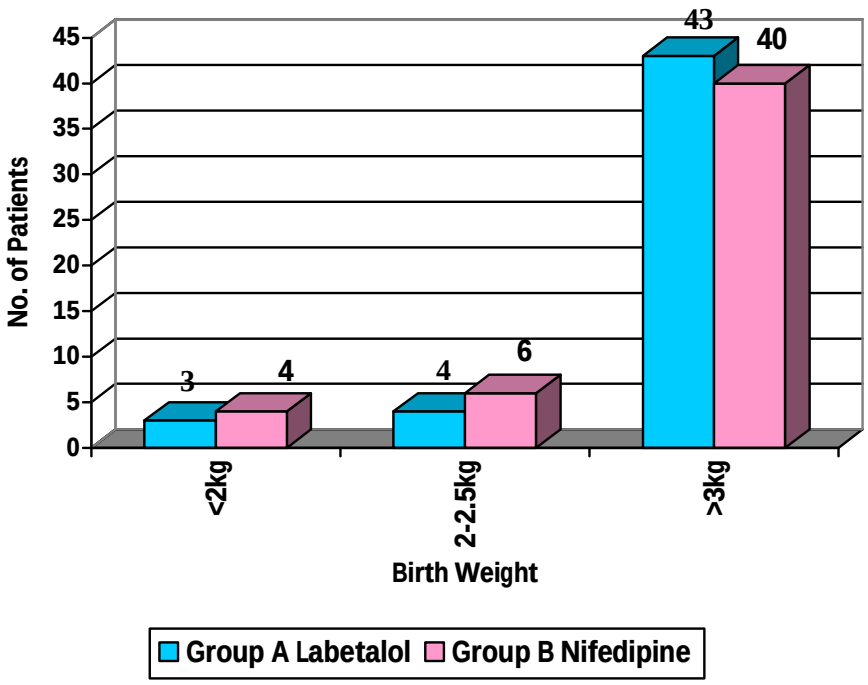


TABLE 19

NEONATAL ADMISSION

Chi-square test

Neonatal admission	Group A		Group B		Total		Statistical inference
	(n=50)	*(100%)*	*(n=50)*	*(100%)*	*(n=100)*	*(100%)*	
Yes	4	8.0%	5	10.0%	9	9.0%	X^2=1.111 Df=2.132>0.05 Not Significant

NEONATAL ADMISSION:

In group A 4 (8%) babies born had neonatal admission.

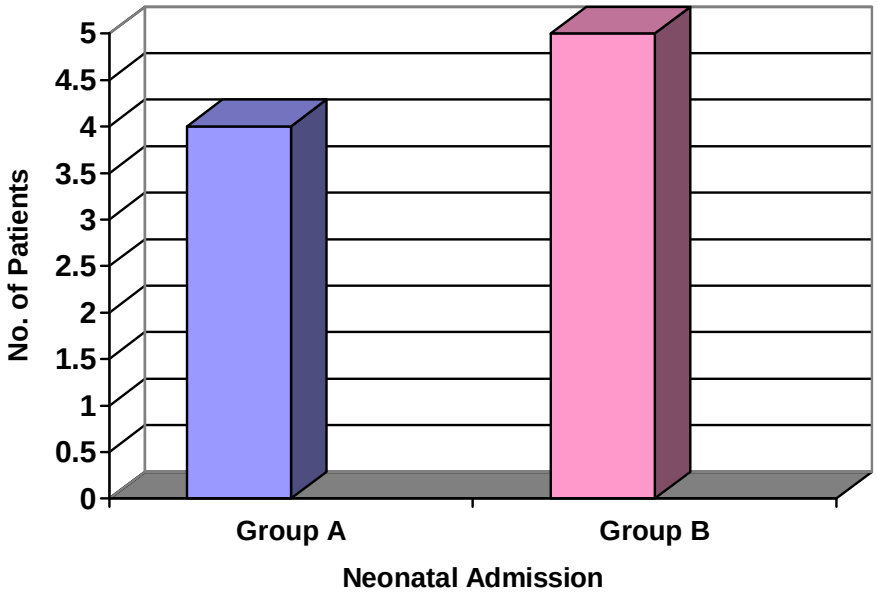
In group B 5 (10%) babies born had neonatal admission.

There was no statistical difference between the two groups.

The most common reasons being RDS and TTN.

CHART 19

NEONATAL ADMISSION



Group A-Labetalol Group B-Nifedipine

TABLE 20

POSTPARTUM FOLLOW UP

Chi-square test

Post natal	Group A		Group B		Total		Statistical inference
	(n=50)	*(%)*	*(n=50)*	*(%)*	*(n=100)*	*(%)*	
Yes	2	4.0%	4	8.0%	6	6.0%	X^2=.709 Df=1 .400>0.05 Not Significant

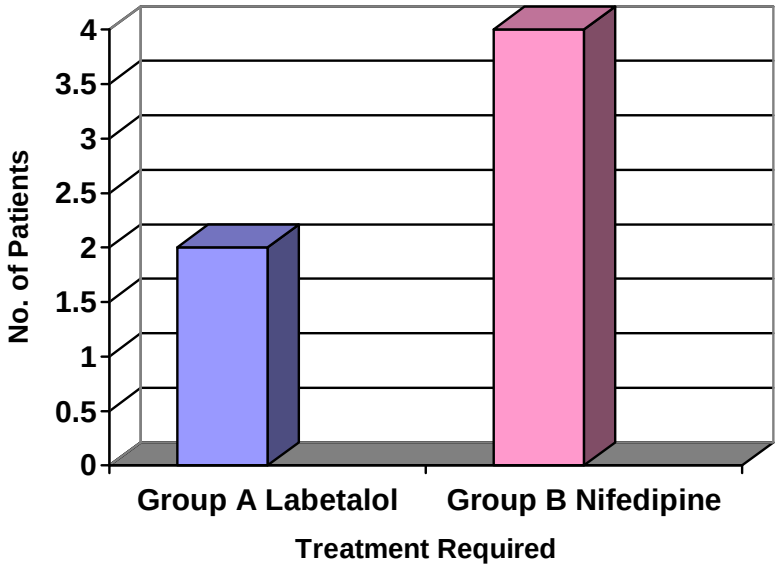
POSTPARTUM FOLLOW UP:

In group A 48 patients (96%) did not require anti hypertensive in their post partum period. Remaining 2 patients (4%) required treatment.

In group B 46 patients (92%)did not require anti hypertensive in their post partum period. Remaining 4 patients (8%) required treatment.

CHART 20

POSTPARTUM FOLLOW UP



DISCUSSION

This study compares the efficacy of two antihypertensives, T.Labetalol and T.Nifedipine in mild preeclampsia.The drug side effects and feto maternal outcome were also studied.

100 patients were included in the study. 50 patients were assigned to take T.Labetalol and 50 patients were assigned to take T.Nifedipine. Both groups were similar in age group, BMI and gestational age at diagnosis.

Age of the patients in both groups were between 21 and 25 years. Most of the patients in both groups were over weight with BMI more than 25.

In a study by Kumar S Ganesh et al,(June 2010) risk factors of preeclampsia were studied. In this study the common age group at diagnosis was between 21 and 30 years[47]. Most of the patients in this study also were over weight with BMI more than 25.

Regarding the obstetric score, most of the patients in both groups were primi gravida.

In a study by Prakash et al.(2006) it was proved that preeclampsia was common among primi gravida rather than multi gravida.

In both the groups, for 60% of the patients, gestational age at diagnosis was between 34 and 36 weeks.

In group A, that is patients on T.Labetalol the dose required to achieve adequate control of blood pressure ranged from 200mg upto 600mg per day. 34% of the patients required 200mg, 26% of the patients required 300mg, 22% of them required 400mg, 14% required 500mg, 4% required 600mg.

In group B, that is patients on T.Nifedipine the dose required ranged from 20mg to 40 mg per day. 28% of the patients were controlled with 20mg, 48% were controlled with 30mg, 24% were controlled with 40mg.

In both the groups adequate control of blood pressure was achieved. There by proving that both T.Labetalol and T.Nifedipine are equally efficacious.

This result is consistent with a meta analysis by Prof.Peter Von Dadelszen et al.(2007). Here the efficacy of oral labetalol and nifedipine were analysed in mild preeclampsia. They have proved that both the drugs are effective, safe and rapid in their onset of action.

This is also consistent with the study by Bharathi et al.(2009)[48]. Here antihypertensive efficacy in mild preeclampsia was studied and it was proved that both T.Labetalol and T.Nifedipine are equally effective.

In contrary to this study, Patel NK et al. (2012 Dec)[49] have proved that T.Labetalol has better efficacy than T.Nifedipine in mild preeclampsia.

Even though adequate control of blood pressure was achieved in both the groups the basic pathology behind the disease could not be altered. This is evident because in both the groups few patients progressed to severe preeclampsia with adequate blood pressure control.

In group A patients (T.Labetalol) 14% progressed to severe preeclampsia. Among them 2% had worsening of protienuria, 8% had utero placental insufficieny which was evident by the onset of oligohydramnios (4%) , IUGR (2%) and intrauterine death of the fetus (2%) , 2% developed papilledema and 2% developed imminent eclampsia.

In group B patients (T.Nifedipine) 20% progressed to severe preeclampsia. Among them 6% had worsening of proteinuria, 6% had oligohydramnios, 6% had IUGR and remaining 2% of them developed imminent symptoms.

Thus even though the rate of disease progression to severe preeclampsia was higher in group B , it was not statistically significant.

Regarding the drug side effects , in group A patients who took T.Labetalol none of them developed any side effects. In group B patients who took T.Nifedipine 12% of them developed side effects.

This difference was statistically significant. The most common side effect being headache (6%) followed by palpitation (4%) and giddiness (2%). Thus proving that T.Labetalol was well tolerated and without any side effects.

In the same study by Bharathi et al. both drugs had side effects but the side effects were higher in T.Nifedipine group .Similar to our study the most common side effect with T.Nifedipine was headache .But in contrary to this study ,where there was no side effects with T.Labetalol ,in the study by Bharathi et al. the most common side effect with T.Labetaolol was headache .

In group A patients taking T.Labetalol 86% of them delivered at term gestation. Rest of the 14% delivered preterm as pregnancy was terminated due to progression to severe preeclampsia, among which 8% delivered between 28 and 33 weeks gestation and the rest 6% were between 34 and 37 weeks gestation.

In group B patients taking T.Nifedipine 80% of them delivered at term gestation. Rest of the 20% delivered preterm as pregnancy was terminated due to progression to severe preeclampsia. Among which 8% delivered between 28 and 33 weeks gestation and 12% delivered between 34 and 37 weeks.

Thus in both the groups majority delivered at term. There was no significant difference in the gestational age at delivery between both the groups.

In group A patients ,76% had vaginal delivery and 24% had caesarean section.In group B patients, 70% had vaginal delivery and 30% had caesarean section.

Regarding the neonatal out come , in group A 86% were term babies and 14% were preterm babies. Among the 14% , 8% had birth weight between 2 and 2.5 kg. The remaining 6% had birth weight less than 2 kg.

In group B 80% were term babies and 20% were preterm babies. Among the 20%, 12% had birth weight between 2 and 2.5 kg. The remains 8% had birth weight less than 2 kg.

In group A 8% of the babies were admitted in SNN ward and in group B 10% of the babies were admitted in SNN ward. The most common reason being respiratory distress of new born due to pre maturity. Thus in both the groups there is no significant difference in the neonatal outcome.

This is consistent with the results of study by E.J.Waterman et al (2004)[50], which showed that there are no differential effects on utero placental or fetal hemodynamics with the use of T.Labetalol and T.Nifedipine in hypertension in pregnancy. The same study proved no differential effects on neonatal outcome including birth weight.

In contrary to this, the study by Patel NK et al.(2012 the neonatal outcome was better with T.Labetalol as there was lower incidence of respiratory distress of new born. This is because T.Labetalol maintains adequate placental perfusion and there by tissue oxygenation.

Post partum follow of patients in both the groups , 4% patients in group A (T.Labetalol) and 6% patients in group B (T.Nifedipine) required continuation of antihypertensive in the post partum period.

In this study none of the patients developed life threatening complication of preeclampsia such as coagulopathy, eclampsia, pulmonary edema, HELLP syndrome and postpartum colapse. There was **no maternal mortality in this study.**

SUMMARY

This study was conducted on a total of 100 antenatal mild preeclamptic women to compare the anti hypertensive efficacy of T.Labetalol and T.Nifedipine. The maternal and fetal outcome were also studied.

Hypertensive disorder in pregnancy is the third most common cause of maternal mortality. Among them 50% of the deaths are preventable when diagnosed and treated at an earlier stage. Hence this study was proceeded.

Patients were divided into two groups 50 each. Group A received T.Labetalol and group B received T.Nifedipine.

Blood pressure and feto maternal status were serially monitored. Termination was done at 37 completed weeks gestation or when the patient progressed to severe preeclampsia.

The average dose required for T.Labetalol was 300 mg and 30 mg for T.Nifedipine.

In both the groups, all 50 patients had adequate control of blood pressure. Inspite of adequate control the disease progressed in both groups.

In group A (T.Labetalol) 14% progressed to severe pre eclampsia. In group B (T.Nifedipine) 20% progressed to severe pre eclampsia.

Among the babies delivered, in group A 86% were term babies and 8% required SNN admission. In group B 80% were term babies and 10% required SNN admission.

Comparing the two groups, group B had significantly higher number of side effects when compared to group A.

None of the patients developed grave complications such as HELLP syndrome ,pulmonary edema, coagulopathy, postpartum collapse, eclampsia. The maternal mortality was nil.

Thus when patients with preeclampsia are identified and treated at an earlier stage the morbidity and mortality associated with preeclampsia can be significantly reduced.

CONCLUSION

From this study it is prudent that both T.Labetalol and T.Nifedipine are equally efficacious in the control of hypertension in mild preeclampsia.

In both the groups , there was progression to severe preeclampsia in an average of 16% of the patients even though their blood pressure was under control. There by showing that the pathology of disease was not altered significantly in both the groups.

Regarding the drug side effects and tolerability, T.Labetalol was significantly better than T.Nifedipine.

There was no significant difference in the neonatal outcome between the two groups.

Thus **T.Labetalol is a better alternative to T.Nifedipine, as it had lesser side effect profile.**

But in a limited resource setting, T.Nifedipine is an equally effective, cheap and easily available drug for mild preeclampsia.

BIBILIOGRAPHY

1.Cunningham et al:Williams obstetrics. 23rd edition, 34: 706.

2. Maternal mortality associated with hypertensive disorders of pregnancy in Asia. BJOG: Volume 99: Issue 7 ,2005.

3. Park :Text book of community medicine 22nd edition,10:515.

4. ACOG Practice Bulletin: Diagnosis and management of preeclampsia. No 33. Jan 2002. ACOG .Int J Gynaecol Obstet 77:67-75.

5. Fernando Arias : High Risk Pregnancy and Delivery. 3rd edition ,16:414.

6. Steven G.Gabbe : Obstetrics normal and problem pregnancies. 6th edition, 33:866-867.

7. Kristen Duckitt et al: Risk factors of preeclampsia. BMJ 330:565, 2005.

8. Sheehan H et al: Pathology of Toxemia in pregnancy .36: 676, 1973.

9. Wash SW: Preeclampsia : An imbalance in placental prostacyclin and thromboxane production .Am J Obstet Gynecol 152:335, 1985.

10. Robbins :Text Book of Pathology.8th edition ,22:1055-1057.

11. Spargo B et al: Glomerular capillary endotheliosis in toxemia of pregnancy. Arch Pathol 68: 593-599, 1959.

12. Zeek PM et al: Vascular changes with eclamptogenic toxemia of pregnancy. Am J Clin Pathol 20: 1099-1109, 1950.

13. Allaire AD et al: Placental apoptosis in preeclampsia. Am J Obstet Gynecol 96:271-276,2000.

14. Meekins et al: A study on placental bed spiral arteries and trophoblast invasion in normal and severe preeclampsia. Br J Obstet Gynaecol 101:669-674, 1994.

15.Cotton DB et al: Haemodynamic profile of severe preeclampsia . Am J Obstet Gynecol 158:523-529,1988.

16. Belfort MA et el: Hypertension in pregnancy . Am J Obstet Gynecol 187:626-634, 2002.

17.Heilmann: Hemostatic abnormalities in pregnancy with sevre preeclampsia. Clin Appl Thromb Hemostat 13: 285,2007.

18. D.K. James: High risk pregnancy and management options. 4th edition, 36:600-620.

19. Carlson KL et al: Changes in preeclampsia. Am J Obstet Gynecol 190:558,200417.Brinbach DJ : Text book of Obstetrics .2000, p 543

20.Brinbach DJ : Text book of Obstetrics .2000, p 543

21. Laivuori et al: Susceptibility loci for preeclampsia . Am J Hum Genet 72:168,2001.

22. Oudejans et al: The parent of origin effect in preeclampsia. Mol Hum Report 10:589,2004.

23. Sibai BM et al: Prevention of preeclampsia and eclampsia. 2009 page, 215.

24.CLASP Trial. Lancet 343:619-623,1994.

25. S.S. Trivedi : Management of high risk pregnancy – A Practical Approach . 1st edition 15: 301-302,2010.

26. Ward K: Markers in preeclampsia: Chesley's Hypertensive disorders in pregnancy ,3rd edition page 51, 2009.

27. Sibai BM : Diagnosis and management of gestational hypertension and preeclampsia.102: 181-192, 2003.

28. National Institute of Clinical Excellence clinical guidelines 107:20, 2011. 48.

29. John T. Queenan: Protocol for high risk pregnancies. 4th edition 68: 444, 2006.

30. PeterVon Dadelzen: Meta analysis on antihypertensives in pregnancy, Lancet.2007.

31. Morko Foloic et al: Antihypertensive drug therapy for hypertensive disorders in pregnancy. Acta Medica Medianae Vol .47, 2008.

32. Reena Verma et al: A comparative RCT on efficacy of labetalol vs methyl dopa in treatment of hypertension during pregnancy. International Journal of Life science and Pharma research. Vol 21:1, Jan 2012.

33. Tyagi et al: Comparitive study on antihypertensives in pregnancy. Journal of pharmaceutical and biomedical sciences. 31: 1123-1129, 2013.

34. Herman P. Van Geijn et al. Nifedipine trials. BJOG, Vol 112 : 79-83, 2005.

35. Lippincot's Pharmacology. 5th edition 3:95.

36. R.S.Satoskar: Pharmacology and Pharmacotherapeutics. 22nd edition 17:276-277, 2011.

37. Gerald G. Briggs: Drugs in pregnancy and lactation. 9th edition page: 797-799, 2009.

38. George M. Bremer : Textbook of Pharmacology . 3rd edition 11:114-115, 2010.

39. Carl P.Weiner : Drugs for pregnancy and lactating women. 2nd edition page: 559, 2010

40. Creasy and Rseniks : Maternal- Fetal medicine. 6th edition, 36:658-661.

41. Levin AC et al: The safety of calcium channel blockers in human pregnancy. Ann Pharmacotter 28: 1371-1378, 1994.

42. Houtzaga BA et al: Long term follow up of children exposed to nifedipine. BJOG 113: 324-331, 2006. 53.

43. Betram G. Katzung: Basic and Clinical Pharmacology. 12th edition 12:203-205.

44. Thara V Shanbag : Textbook of Pharmacology .1st edition 3:111-112.

45. Sharma HL : Principles of Pharmacology. 2nd edition 19: 266-270, 2011.

46. Lindheimer et al: Hypertensive disorders in pregnancy. J Am Soc 6: 484,2009

47. Kumar S.Ganesh et al: Risk factors in preeclampsia. Indian Journal of Community Medicine 35(4) : 502-505, 2010

48. Bharathi et al: Comparison of antihypertensive efficacy. Pharmacologyonline 3:670-678, 2009.

49. Nita K patel et al: Comparitive evaluation of a anti hypertensive drugs in preeclampsia. Int J Basic Clin Pharmacol 1(3):174-177, 2012.

50. E.J .Water man et al. Hypertension in pregnancy. Vol 23, 2: 155-169, 2004

PROFORMA

NAME: ADDRESS:

AGE:

IP NUMBER:

PHONE NUMBER: HT: WT:

OBSTETRIC SCORE: LMP: EDD:

GESTATIONAL AGE AT DIAGNOSIS:

BP ON ADMISSION:

PRESENTING ILLNESS:

PAST H/O:

MENSTRUAL H/O: MARITAL H/O:

RISK FACTORS:

INVESTIGATIONS:

CT:

CRT:

RFT:SR.UREA: CREATININE: RBS:

LFT:TOTAL BILIRUBIN: DIRECT: INDIRECT:

SGOT: SGPT:

CBC:HB: PLATELET:

PROTHROMBIN TIME:

URINE ALBUMIN:

URINE SUGAR:

URINE DEPOSITS:

FUNDUS OPINION:

ULTRASOUND FINDING:

DRUG:

DOSE:

MODIFIED BIOPHYSICAL PROFILE:

GESTATIONAL AGE AT TERMINATION:

REASON FOR TERMINATION:

COMPLICATIONS:

Maternal

Drug induced

MODE OF DELIVERY:

NEONATAL OUTCOME:

NEONATAL ADMISSIONS:

DURATION OF STAY IN NICU
:
POST PARTUM FOLLOW UP:

GROUP A

Sl. No.	Name of the patient	BMI	age	IP no	Obstetric score	Gestational age at diagnosis (Weeks)	Dose (mg)	Control of blood pressure	Progress to severe Preeclampsia				Drug side effects	Gestational age at Delivery (Weeks)	Mode of delivery			Neonatal outcome and birth weight		Post natal follow up and treatment	neonatal admission
									Proteinuria >1g+	IUGR/Oligohy-dra	Papilledema	Imminent Eclampsia			Vaginal	L S C S	Indication	Pre term (Kg)	Term (Kg)		
1	saroja	1	1	273624	1	1	3	1	1				1	2	1			2		1	2
2	vijaya	1	1	273656	1	2	3	1					1	3	2				3	2	2
3	tamilmani	3	1	272376	2	1	3	1					1	3	2				3	2	2
4	anushya	3	1	272626	1	1	4	1		3			1	1	1			1		2	2
5	**saraswasithy**	3	2	269676	2	2	2	1					1	3	2				3	2	2
6	maercy	3	2	269765	1	3	1	1					1	3	2				3	2	2
7	ponamal	3	2	255211	2	1	5	1		2			1	2		1	1	2		2	2
8	kanagambal	3	2	269346	1	2	3	1					1	3	3				3	2	2
9	renaganayaki	3	2	266252	3	2	1	1					1	3		1	2		3	2	2
10	suseela	3	2	271564	1	1	3	1		2			1	1	1			1		2	1
11	veeramal	3	2	259636	3	2	1	1					1	3	1				3	2	2
12	poonguiazhi	3	2	259336	1	1	4	1					1	3	2				3	2	2
13	saradha	3	2	261670	3	3	1	1					1	3	2				3	2	2
14	veeramal	3	2	259636	1	2	2	1					1	3	2				3	2	2
15	sarambal	1	2	261136	1	3	1	1					1	3	3				3	2	2
16	rani	3	2	265256	2	2	1	1					1	3	2				3	2	2
17	valarmathy	3	2	256326	1	2	2	1					1	3	2				3	2	2
18	malliga	2	2	255760	3	1	3	1		1			1	2		1	3	2		2	1
19	komala	1	2	259664	2	3	1	1					1	3		1	4		3	2	2
20	valarmathy	2	2	256326	2	1	4	1					1	3		2	5		3	2	2
21	selva	2	2	251916	2	2	3	1					1	3	2				3	2	2
22	rajathi	2	2	252261	1	2	1	1					1	3	2				3	2	2

23	maheshwari	1	2	252432	2	1	5	1			1		1	2	2			2		1	1
24	lakshmi	2	2	251433	3	2	3	1					1	3		2	6		3	2	2
25	papathy	2	2	256359	4	2	3	1					1	3	2				3	2	2
26	mariyamal	2	2	256659	1	3	2	1					1	3	4				3	2	2
27	anthoniammal	2	2	255916	3	2	3	1					1	3		1	2		3	2	2
28	anjammal	2	2	254219	1	3	1	1					1	3	2				3	2	2
29	rukmani	2	3	255626	1	2	4	1					1	3	4				3	2	2
30	govindhammal	2	3	259214	2	2	1	1					1	3		2	5		3	2	2
31	renganayaki	2	3	257763	1	3	2	1					1	3	2				3	2	2
32	manimegalai	2	3	256665	1	2	2	1					1	3		2	7		3	2	2
33	baby	2	3	256676	2	2	3	1					1	3	2				3	2	2
34	vasambal	3	3	250676	1	3	2	1					1	3	2				3	2	2
35	valliammal	3	3	257336	1	2	2	1					1	3	2				3	2	2
36	senthamil selvi	1	2	259616	1	2	4	1					1	3	2				3	2	2
37	chandra	3	3	256960	2	2	1	1					1	3	2				3	2	2
38	nabesha	2	3	255451	1	3	1	1					1	3	3				3	2	2
39	andal	2	3	256004	2	2	2	1					1	3	2				3	2	2
40	maheshwari	1	2	244620	2	2	2	1					1	3	2				3	2	2
41	rengammal	2	3	244991	1	2	1	1					1	3		2	7		3	2	2
42	vasantha	2	3	245926	1	3	1	1					1	3	2				3	2	2
43	kallammal	2	4	246624	3	1	4	1				1	1	1		1	3	1		2	1
44	anjammal	3	4	252614	1	2	1	1					1	3		1	3		3	2	2
45	amala	3	4	243179	4	2	2	1					1	3	2				3	2	2
46	veerammal	3	4	256970	1	2	2	1					1	3	2				3	2	2
47	selvi	3	4	256157	1	2	1	1					1	3	3				3	2	2
48	vijaya	3	4	237059	1	2	4	1					1	3	2				3	2	2
49	meena	3	4	249961	2	2	2	1					1	3	2				3	2	2
50	chellam	3	4	244963	4	2	1	1					1	3	2				3	2	2

KEY WORDS

AGE:	1	<20yr	PROGRESSION TO		
	2	21-25	SEVERE PREECLAMPSIA:		
	3	26-30			
	4	>30			
BMI:	1	<18	IUGR	1	
	2	18-24			
	3	>25	OLIGHYDRAMNIOS	2	
PARITY	1	G1	IUD	3	
	2	G2			
	3	G3			
	4	G4	DRUG SIDE EFFECTS:		
GESTATIONAL AGE AT DIAGNOSIS:				1	no side effects
				2	side effects+
	1	28-33WKS			
	2	34-36 WKS	GESTATIONAL AGE AT DELIVERY:		
	3	TERM GESTATION			
				1	28-33wks
DOSAGE				2	34-36wks
	1	200mg		3	TERM GESTATION
	2	300mg			
	3	400mg	VAGINAL DELIVERY:		
	4	500mg			
	5	600mg		1	labour naturale
				2	labour naturale with episiotomy

CONTROL OF BP:

1 controlled

2 not contolled

LSCS

1 emergency

2 elective

INDICATION:

1 severe oligo with fetal distress

2 previous 2 lscs in labour

3 failed induction

4 previous 2 lscs in labour

5 previous 1 lscs with cpd

6 previous 2 lscs in labour

7 cpd

BIRTH WEIGHT:

1 <2kg

2 2-2.5kg

3 >2.5kg

POST NATAL TREATMENT RECQUIRED:

1 yes

2 no

NEONATAL ADMISSION:

1 yes

2 no

3 outlet forceps delivery

4 vaccum delivery

GROUP B

Sl. No.	Name of the patient	Bmi	Age	Ip. No.	Obstetric score	Gestational age at diagnosis (Weeks)	Dose (mg)	Control of blood pressure	Progress to severe Preeclampsia				Drug side effects	Gestational age at Delivery (Weeks)	Mode of delivery			Neonatal outcome and birth weight		Post natal follow up and treatment	neonatal admission
									Proteinuria >2	IUGR/Oligohy	Papilledema	Imminent edampsia			Vaginal	L S C S	Indication	Pre term (Kg)	Term (Kg)		
1	maheshwari	1	1	249660	3	1	2	1	1					1		1	3	1		2	1
2	selvi	3	3	246662	2	2	1	1						3	1				3	2	
3	uma	2	2	246961	1	2	2	1				1		2	3			2		2	
4	deepa	2	2	247975	1	3	3	1						3	2				3	2	
5	kunjalambal	3	4	246664	2	2	1	1					1	3		1	4		3	2	1
6	valdeshwari	1	2	244963	3	3	2	1						3	1				3	2	
7	amaravathy	2	3	244763	1	2	2	1						3	2				3	2	
8	anadavalli	1	2	244676	2	2	3	1						3		1	4		3	2	
9	chandra	3	2	243174	1	2	2	1		2				2		1	1	2		1	
10	veena	1	4	246721	1	2	1	1					2	3	3				3	2	
11	arumbu	3	3	241176	2	2	3	1						3	2				3	2	
12	jannath mary	1	2	246721	1	2	2	1						3	2				3	2	
13	fathima	3	4	241126	3	1	3	1						3		1	2		3	2	
14	sumathy	1	2	246153	1	2	1	1					2	3	2				3	2	
15	vasuki	3	3	244603	2	2	2	1						3	2				3	2	
16	priya	1	1	247633	1	2	2	1	2					2		2	7	2		2	
17	tamilarasi	3	2	233477	1	1	2	1		1				1	2			1		1	1

Sl. No.	Name of the patient	Bmi	Age	Ip. No.	Obstetric score	Gestational age at diagnosis (Weeks)	Dose (mg)	Control of blood pressure	Progress to severe Preeclampsia				Drug side effects	Gestational age at Delivery (Weeks)	Mode of delivery			Neonatal outcome and birth weight		Post natal follow up and treatment	neonatal admission
									Proteinuria >2	IUGR/Oligohyi	Papilledema	imminent eclampsia			Vaginal	L S C S	Indication	Pre term (Kg)	Term (Kg)		
18	suseela	3	2	244963	2	2	1	1						3	2				3	2	
19	sulochana	3	3	242836	3	2	2	1						3		1	2		3	2	
20	rengammal	3	2	252965	1	2	3	1						3	2				3	2	
21	chellam	2	4	249621	2	3	2	1						3		2	5		3	2	
22	vasanthi	3	3	251437	1	2	2	1						3	2				3	2	
23	selva	2	2	252614	2	1	3	1		1				1	2			1		2	1
24	ramayee	3	2	251614	3	3	2	1	1					2	1			2		2	
25	backiyam	2	4	253614	1	2	2	1		1				2		1	1	2		2	
26	kamala	2	2	239021	2	1	3	1						3	2				3	2	
27	lakshmi	3	2	242835	1	3	3	1						3		2	5		3	2	
28	chitra	3	3	249021	2	2	2	1						3	4				3	2	
29	dhanam	2	2	270217	3	2	2	1		2				2	2			2		2	
30	vaishnavi	3	3	240792	1	3	2	1					3	3	2				3	2	
31	rasathi	2	4	263601	2	1	2	1		2				1		1	1	1		2	1
32	ambiga	3	2	259622	3	2	3	1						3	2				3	2	
33	sivakami	2	4	259611	1	2	1	1						3	2				3	2	
34	amala	3	2	271022	2	2	2	1					3	3	1				3	2	
35	jagatha	3	2	270123	1	3	1	1						3	2				3	2	

Sl. No.	Name of the patient	Bmi	Age	Ip. No.	Obstetric score	Gestational age at diagnosis (Weeks)	Dose (mg)	Control of blood pressure	Progress to severe Preeclampsia				Drug side effects	Gestational age at Delivery (Weeks)	Mode of delivery			Neonatal outcome and birth weight		Post natal follow up and treatment	neonatal admission
									Proteinuria >2	IUGR/Oligohy	Papilledema	Imminent eclampsia			Vaginal	L S C S	Indication	Pre term (Kg)	Term (Kg)		
36	rani	2	2	271126	1	2	3	1						3		2	5		3	2	
37	deepika	3	4	244567	3	1	2	1						3	2				3	2	
38	deepa	3	2	233789	2	2	1	1						3	1				3	2	
39	manju	2	3	244567	1	3	2	1					3	3		2	7		3	1	
40	radhika	1	1	243667	4	2	1	1						3	2				3	2	
41	shiny	3	2	245637	2	1	1	1						3	4				3	2	
42	arockiyamary	2	3	279660	4	2	2	1						3	2				3	2	
43	rajeshwari	2	4	273345	1	3	1	1						3	3				3	2	
44	amutha	3	2	270783	1	1	3	1						3	4				3	2	
45	shobana	3	2	264212	1	2	1	1						3		2	7		3	1	
46	maheshwari	2	4	270664	2	2	3	1						3	2				3	2	
47	porselvi	3	3	263026	1	2	2	1						3	2				3	2	
48	packiyam	2	2	264463	1	2	1	1						3	2				3	2	
49	vembu	3	2	257966	1	3	1	1						3	2				3	2	
50	kanaga	3	3	256462	2	1	2	1						3		1	4		3	2	

KEY WORDS:

AGE:	1
<20 yrs	2
20-25	3
>25	4

BMI:	
<18	1
18-24	2
>25	3

OBSTETRIC SCORE:	
G1	1
G2	2
G3	3
G4	4

GESTATIONAL AGE AT DIAGNOSIS:	
28-33wks	1
34-36wks	2
TERM	3

DOSE:	
20mg	1
30mg	2
40mg	3

CONTROL OF BP:	
controlled	1
not controlled	2

PROGRESSION TO PREECLAMPSIA:	
IUGR	1
OLIGOHYDRAMNIOS	2

DRUG SIDE EFFECTS:	
Giddiness	1
palpitation	2
head ache	3

GESTATIONAL AGE AT DELIVERY:	
28-33wks	1
34-36wks	2
term	3

VAGINAL:	
labour naturale	1
labour naturale with episioty	2
outlet forceps delivery	3
vaccum delivery	4

LSCS	
emergency	1
elective	2

INDICATION:	
severe oligohydramnios	1
previous 2 lscs in labour	2
failed induction	3
previous 1 lscs cpd in labour	4
previous 1 lscs	5
previous 1 lscs ious 2 lscs	6
cpd	7

BIRTH WEIGHT:	
<2	1
2-2.5	2
>2.5	3

POSTNATAL TREATMENT:	
RECQUIRED	1
NOT RECQUIRED	2

NEONATAL ADMISSION	
yes	1
no	2

ABBREVATION

BP	- Blood Pressure
T.Labetalol	- Tablet Labetalol
T.Nifedipine	- Tablet Nifedipine
T.Methyl Dopa	-Tablet Methyl Dopa
FDA	- Food and Drug Association
IUGR	- Intra Uterine Growth Retardation
IUD	-Intra Uterine Death
HELLP	- Hemolysis Elevated Liver Enzymes and Low Plat
A-V Block	- Atrio Ventricular Block
IV	- Intra Venous
BMI	- Body Mass Index
SNN	- Sick Neo Nate
OPD	-Out Patient Department
MSAFP	- Maternal Serum Alpha Feto Protein
HCG	-Human Chorionic Gonadotrophin
MDA	-MalonDiAldehyde
CNS	-Central Nervous System
RDS	-Respiratory Distress Syndrome
TTN	-Transient Tachypnoea of Newborn

S

Thanjavur Medical College

THANJAVUR, TAMILNADU, INDIA-613004

(Affiliated to the T.N Dr.MGR Medical University, Chennai)

ETHICAL COMMITTEE

CERTIFICATE

Name of the Candidate : A. CHRISTINA MARY KAVITHA

Course : M.S (OBSTETRICS&GYNAECOLOGY)

Period of Study : OCTOBER 2012 – OCTOBER 2013

College : THANJAVUR MEDICAL COLLEGE

Dissertation Topic : "COMPARISON OF EFFICACY OF T.LABETALOL AND T.NIFEDIPINE AND ITS FETO MATERNAL OUTCOME IN MILD PRE ECLAMPSIA"

The Ethical Committee, Thanjavur Medical College has decided to inform that your Dissertation Topic is approved.

THANJAVUR
DATE:

THANJAVUR MEDICAL COLLEGE * THANJAVUR-4.

SECRETARY
Ethical Committee

ABSTRACT

Aim:

To compare the anti hypertensive efficacy of T. Labetalol and T.Nifedipine in mild preeclampsia and to study its feto maternal outcome.

Methodology:

Totally 100 antenatal women with mild preeclampsia were included in the study. 50 were started on T.Labetalol (Group A) and 50 were started on T.Nifedipine (Group B). Blood pressure, disease progression, drug side effects and neonatal outcome were monitored. Termination was done at 37 completed weeks gestation or when the patient progressed to severe preeclampsia.

Results:

The average dose required for control of blood pressure with T.Labetalol was 300 mg and 30 mg for T.Nifedipine.

In both the groups, all 50 patients had adequate control of blood pressure. Inspite of adequate control the disease progressed in both groups. In group A (T.Labetalol) 14% progressed to severe preeclampsia. In group B (T.Nifedipine) 20% progressed to severe preeclampsia.

Among the babies delivered, in group A 86% were term babies and 8% required SNN admission. In group B 80% were term babies and 10% required SNN admission.

Comparing the two groups, **group B (T.Nifedipine) had significantly higher number of side effects when compared to group A (T.Labetalol) .**

None of the patients developed grave complications such as HELLP syndrome, pulmonary edema, coagulopathy, postpartum collapse, eclampsia. **The maternal mortality was nil.**

Thus when patients with preeclampsia are identified and treated at an earlier stage the morbidity and mortality associated with preeclampsia can be significantly reduced.

Conclusion:

T.Labetalol is a better alternative to T.Nifedipine, as it had lesser side effect profile.

But in a limited resource setting, T.Nifedipine is an equally effective, cheap and easily available drug for mild preeclampsia.

Keywords: T.Labetalol, T.Nifedipine, Preeclampsia